

Society, exhibited a series of lantern-slides made from photographs he had taken on a recent Natural History Expedition to British Guiana.

The following papers were read :—

1. Zoological Collections from Northern Rhodesia and adjacent Territories : Lepidoptera Rhopalocera. By S. A. NEAVE, M.A., B.Sc. Oxon., F.Z.S.

[Received November 9, 1909.]

(Plates I.–III.*, Text-figures 1 & 2, and a Map.)

The following paper is the first yet published, *in extenso*, of the collections of insects which I have had the opportunity of making during recent years in Northern Rhodesia and the Katanga Region of the Congo State. These collections were made on two separate expeditions. The first was during 1904–1906, when I was in N.E. Rhodesia as Naturalist to the Geodetic Survey, then in that country. A short account of the country traversed and of the vertebrates collected on that expedition has already been published in the Transactions of the Literary and Philosophical Society of Manchester, vol. 51, pts. I., II., III. etc. The country covered was the southern third of N.E. Rhodesia and the north-east portion of N.W. Rhodesia. The second expedition began early in 1907, and practically the whole of that year was spent in the Katanga region of the Congo State when I was Entomologist to the Katanga Medical Commission. The following year, 1908, was occupied in travelling over those northern portions of N.E. Rhodesia which had not been visited on my first expedition to that country. The areas covered by the two expeditions are therefore contiguous, comprising the whole of N.E. Rhodesia, the north-eastern portion of N.W. Rhodesia, and the south-eastern or Katanga Region of the Congo State.

The appended Map and Itinerary (see p. 5) will make clearer the relative positions of the localities visited. I have recently published † an account of this part of Africa, more especially in relation to the general features and geographical distribution. It will perhaps be of interest to add a few facts important from an entomological standpoint. As I have pointed out ‡, the country divides itself into three areas :—

(1) The low ground of the Zambezi basin, comprising chiefly the valley of the Zambezi itself and of its tributary the Luangwa.

Of this region, which is hot and low-lying, the chief characteristic is the very marked differences between the wet and dry seasons.

* For explanation of the Plates see p. 85.

† Geographical Journal, xxxv. p. 132.

‡ *Loc. cit.*



Horace Knight del et lith.

West, Newman. chr.

NEW OR LITTLE KNOWN BUTTERFLIES FROM NORTHERN RHODESIA &c.

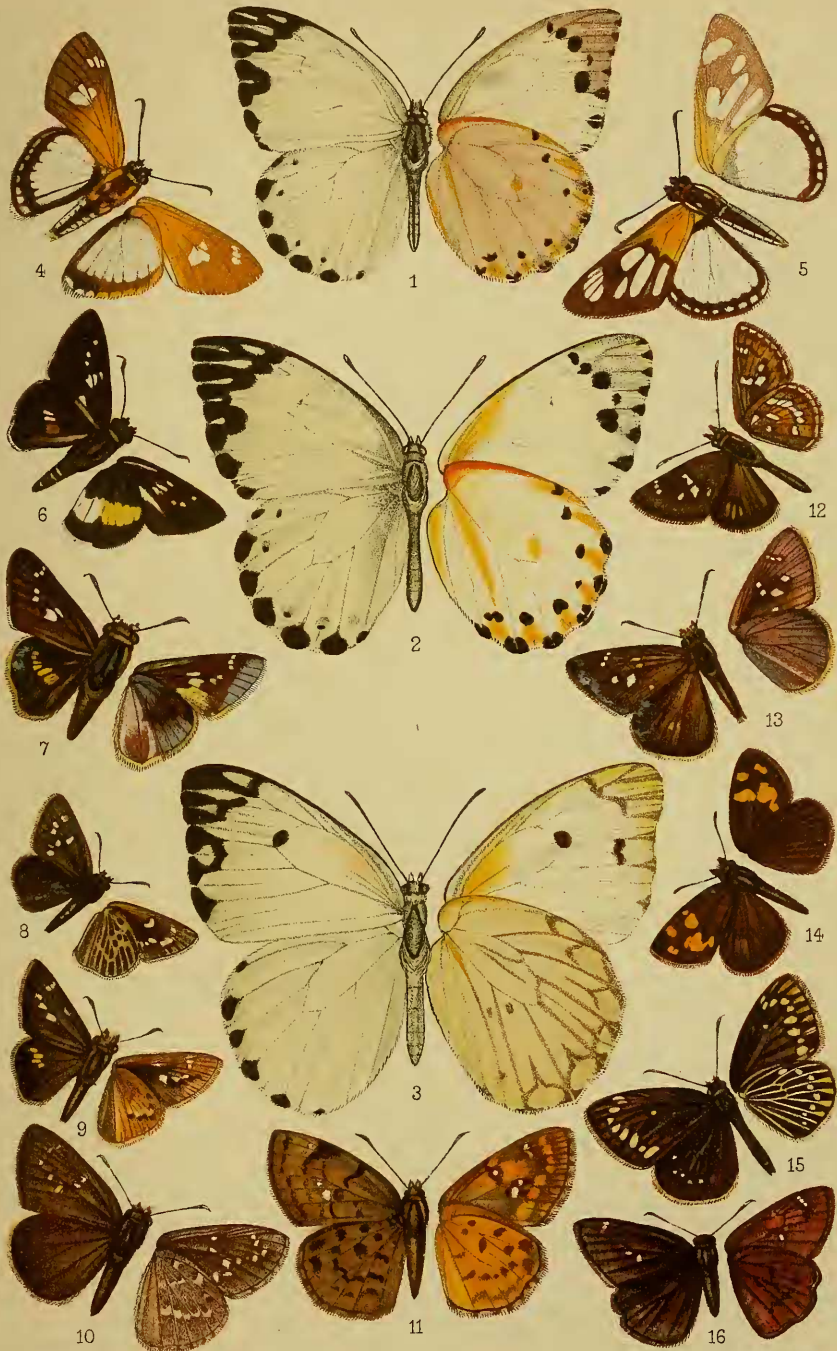


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The wet season in this valley, which has a comparatively small rainfall, lasts from November to the end of March. This state of things is accompanied by correspondingly marked seasonal phases in the butterflies. In addition to those genera in which it is to be expected, such as *Precis*, it is extremely noticeable among the *Acreinae*. In a very large number of species inhabiting this valley, there is a marked tendency to a general dusky suffusion in the individuals of the wet phase, especially among the females. Dry season specimens, on the other hand, are very brilliantly coloured. During the dry season the climate of the Luangwa valley seems especially favourable to the *Pierinae*, which are extremely dominant at that time. Indeed some species, such as *Pinacopteryx simana* Hopff., which I did not meet with elsewhere, were more abundant in thicket-covered country at that season than at any other time. One of the peculiarities of the Luangwa valley from a collector's point of view is the great scarcity of tropical forest, more or less thin woodland being however plentiful. Such forest as does occur is chiefly to be found in small patches on stream-banks at the foot of the Mchinga escarpment on the western side of the valley and in similarly broken ground on the eastern side in Portuguese territory. In these forest spots one finds species which are very rare or do not occur at all elsewhere in the valley. Among them may be mentioned *Euphadra neophron* Hopff., *Acrea cabira apocida* Oberth., *Melanitis libya* Dist., and, at the height of the wet season, *Liptena homeyeri* Dewitz.

The butterflies generally of the Luangwa valley are much the same as those of the tropical portions of S.E. Africa, though some of the coast species which occur on the lower Zambezi and in Nyasaland, such as *Amauris ochlea* Boisd., *A. niavius dominicanus* Trim., *Eronia buqueti* Boisd., etc., appear to be absent, and such species as *Pseudacrea lucretia* Cram. very rare.

(2) The second region comprises the whole of the high plateau country which forms the watershed between the Congo and the Zambezi, and includes isolated patches of elevated land in the Congo basin.

This country is characterised by its cool temperate climate and relatively less marked seasonal change. The rains tend to begin somewhat earlier and end later. One result of this is that the abundance of butterflies and other insect life, associated with the early spring in these regions, begins to be noticeable about the middle of September, some six or seven weeks earlier than is the case in the Luangwa valley. Indeed, it would appear that many *Lycænidae*, more especially species of the genus *Aphnæus*, are on the wing only about this time.

There is a good deal of comparatively open country on this high ground. With it are associated certain butterflies, among which perhaps the more interesting are *Belenois picta*, here described for the first time, the rare *Papilio almansor* Honrath, and, in Katanga, the strangely coloured *Zeritis zorhageni* Dewitz. The remarkable

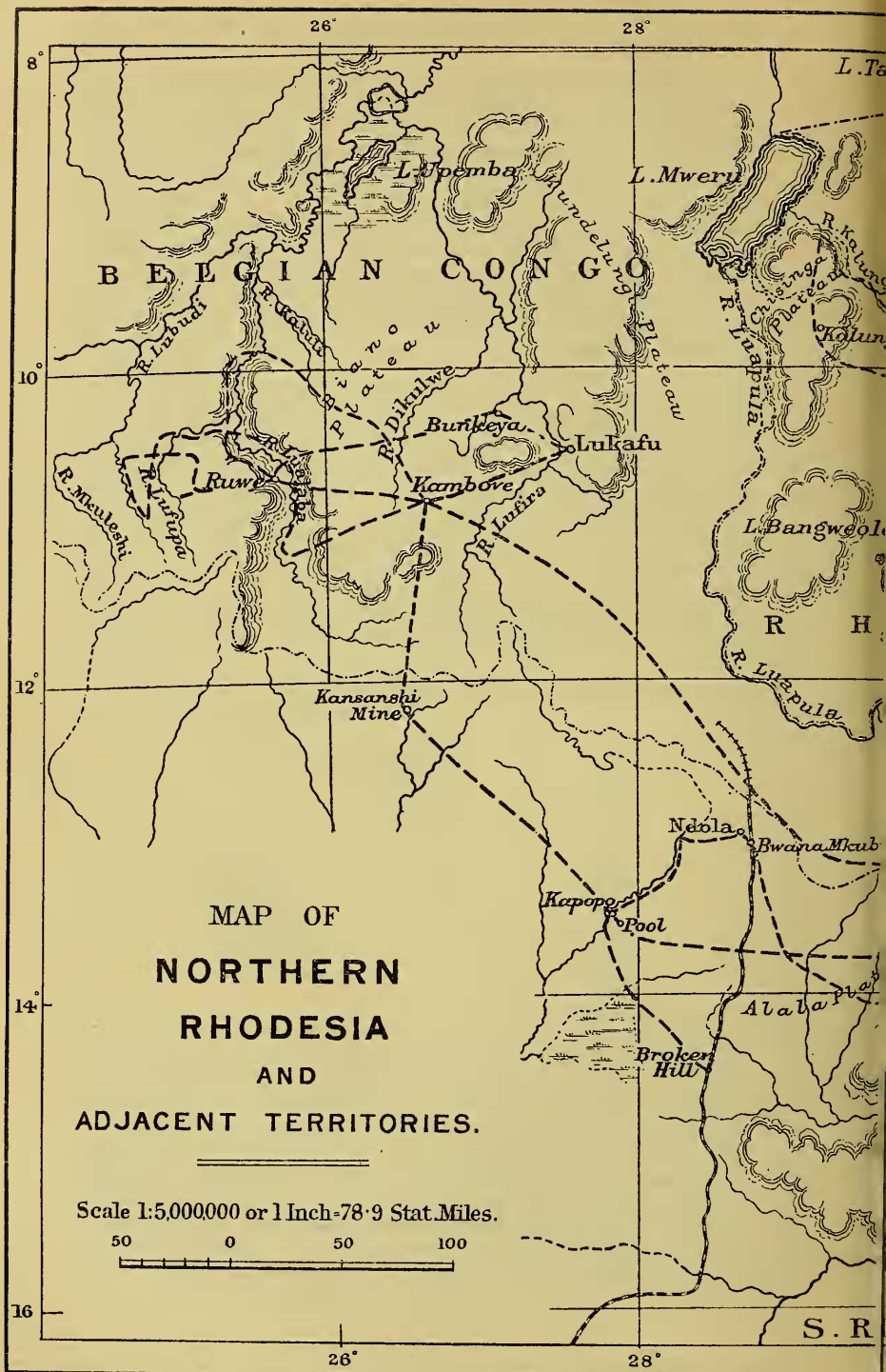
Acreea mirifica Lathy, recorded hereafter, frequents a special form of open country in the shape of marshes. Among the most interesting collecting grounds for the entomologist or naturalist are the patches of dense crowded forest trees, locally called "Msitu." These patches are of varying size, often very small, and are generally on the bank or source of a stream. They are seldom or never affected by the annual bush fires and are consequently the resort throughout the year of innumerable insects, many of which are peculiar to these spots. In Katanga, especially towards the west, even on fairly high ground, these forest patches are the home of several characteristically western genera, but this is hardly the case in those nearer the watershed, especially towards the east.

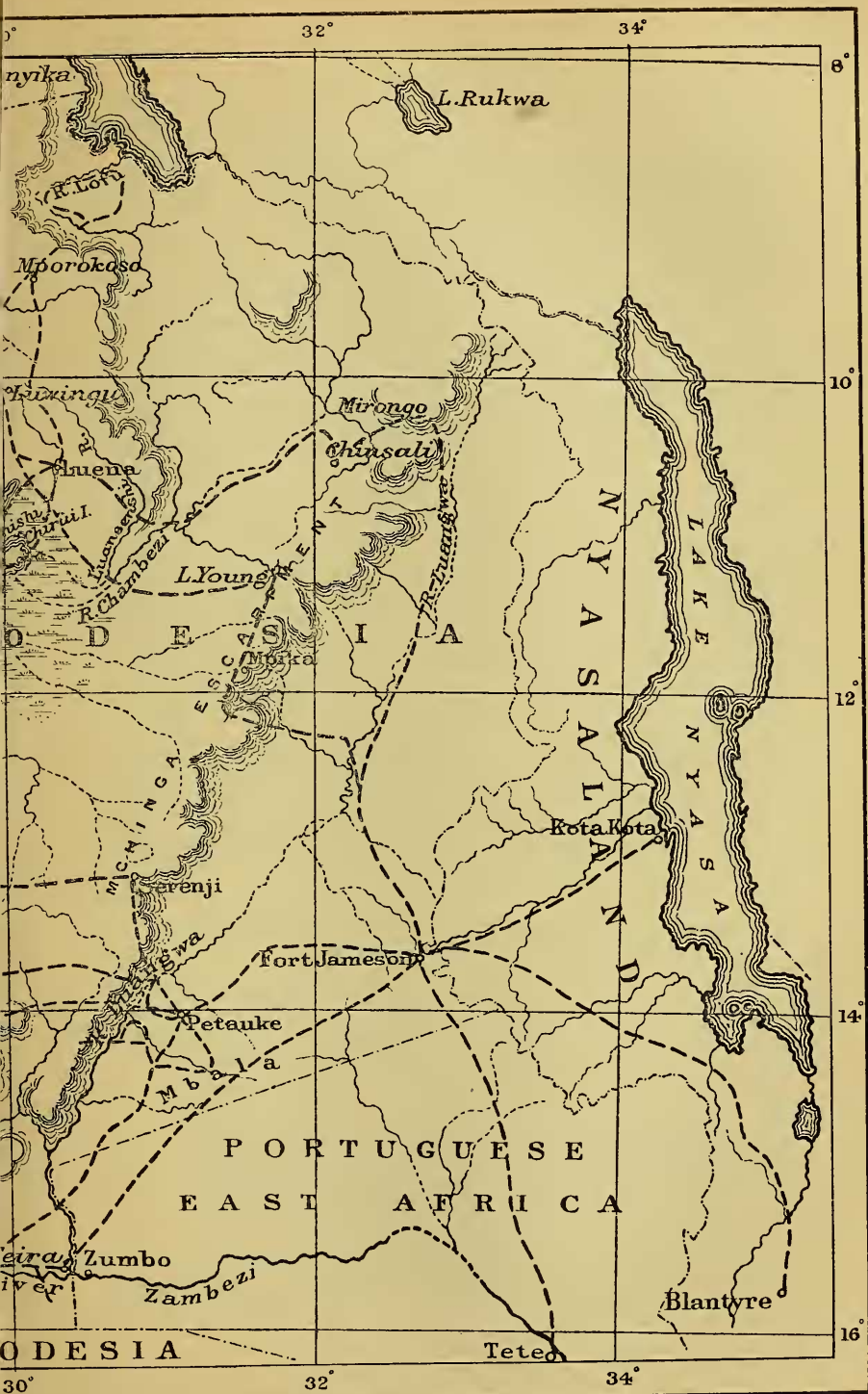
(3) Our third area comprises the low-lying river valleys of the Congo basin. The banks of these rivers, after leaving the high ground, are covered with tropical forest, except in very flat countries. These spots are a paradise for entomologists, and swarm with butterflies of such tropical western genera as *Bicyclus*, *Pseudoneptis*, *Diestogyna*, *Euphædra*, *Euryphene*, *Harma*, etc., etc. This was especially noticeable in the valley of the Lualaba river and to the west of it. I also found many of these forms in the lower Kalungwisi valley in N.E. Rhodesia. Unfortunately, I was not able to visit either spot in the height of the rains, which appears to be the richest season in these localities.

The collection here described contains 450 species, distributed among the families as follows:—

Nymphalidæ.	<i>Danainæ</i>	6
	<i>Salpyrinæ</i>	27
	<i>Acraeinæ</i>	46
	<i>Nymphaliniæ</i>	93
Lemoniidæ		1
Lycenidæ		120
Pieridæ		42
Papilionidæ		15
Hesperiidæ		100
Total		<u>450</u>

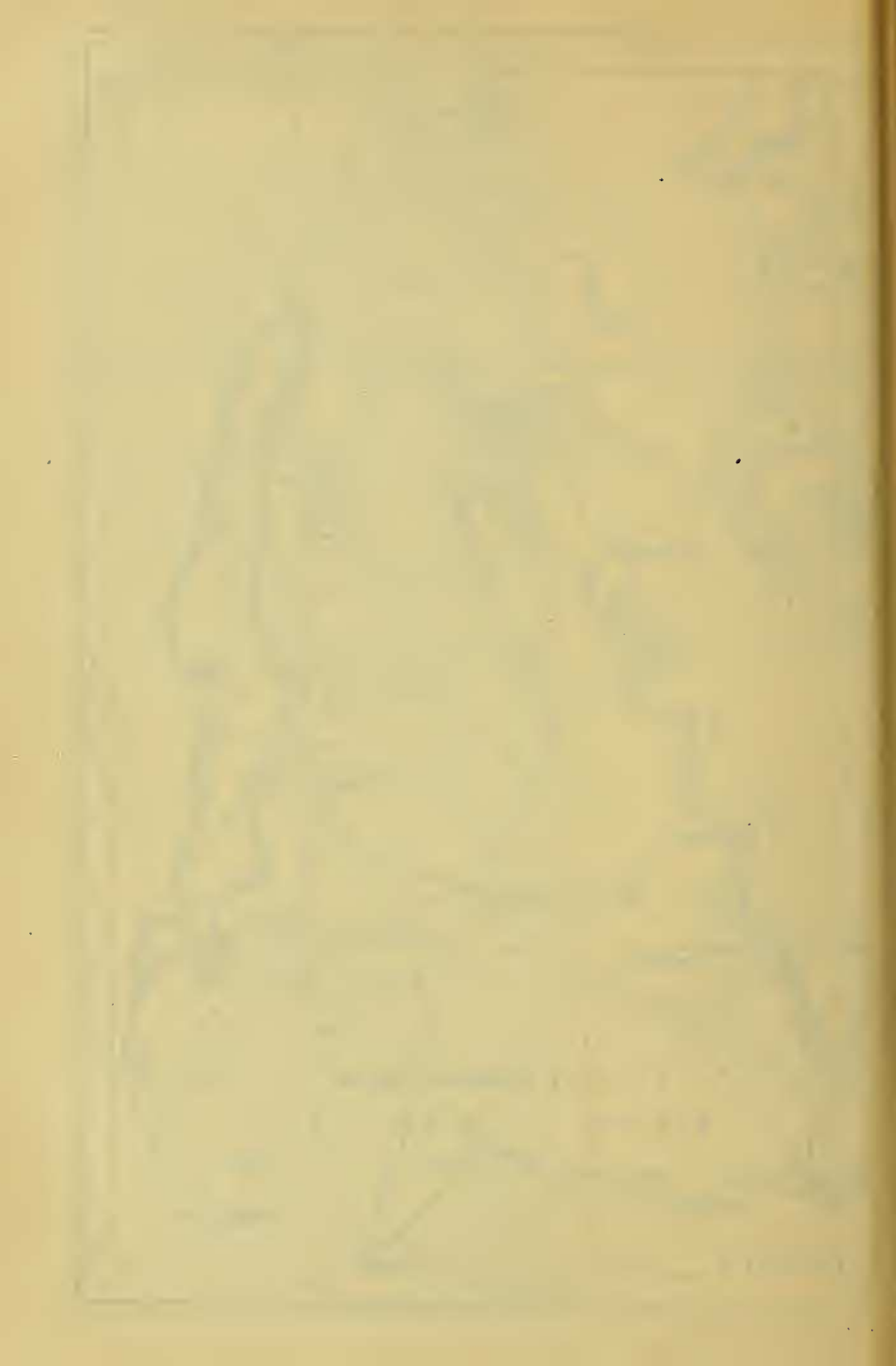
The unusually large proportion of Lycenidæ and Hesperiidæ, which, as may be seen, comprise about half the total, is due to the fact that an attempt was made to give an equal amount of time to collecting all the subfamilies. It seems to have been largely the practice of collectors in the tropics to sacrifice these more inconspicuous forms for those more attractive to the eye. No attempt has been made to record the actual number of specimens captured except in the case of new or rare species. The number of specimens of Lepidoptera brought to England, approximately, was about 25,000. Very large numbers also of commoner species were discarded before the collections came to England. The











collections were all made by myself or by youthful native assistants under my direction.

The following list of species has been arranged as far as possible according to Professor Aurivillius' great work, '*Rhopalocera Æthiopica*.' I have therefore not thought it necessary to give the references or synonymy of species except in the case of those described since the publication of that book, or where some change in the nomenclature seems desirable. In the case of the skippers I have given references only to those species not mentioned in Dr. Holland's paper in these 'Proceedings' for 1896.

The Roman numerals, frequently placed after the locality, refer to the months of capture. In the descriptions of new species the veins are counted from the hind margin to the costa, the first submedian always being vein 2. The descriptions of the markings begin, as far as possible, at the base of the costa and end at the outer margin.

The measurements given are the greatest length of the primary from the middle of the base to the tip.

In the laborious work of identifying so large a number of species I am very greatly indebted to the following friends for their kind assistance:—Mr. G. T. Bethune-Baker, Dr. F. A. Dixey, Mr. Hamilton H. Druce, Mr. F. A. Heron, Dr. Karl Jordan, Mr. G. A. K. Marshall, and finally Mr. Roland Trimen, F.R.S., who has been so kind as to advise and assist me on many points throughout the paper.

I also owe much to the authorities of Magdalen College, Oxford, who, by means of a generous grant, enabled me to spend in Oxford the several months necessary for the production of this paper. The bulk of the collection remains in the Hope Collection at Oxford, where many of the specimens were set and most of the systematic work done. For this I am greatly indebted to the kindness of Professor E. B. Poulton, F.R.S.

The following Itinerary gives a list of the places visited during the two expeditions.

FIRST EXPEDITION (1904 to 1906).

1904. Feb. 22–28. Chinde to Tete.
Feb. 29–Mar. 12. Tete to Fort Jameson, N.E. Rhodesia.
Mar. 13–April 18. Fort Jameson. 4000 feet (rainy season).
April 19–May 6. Fort Jameson to Feira at the junction of the Luangwa and Zambezi rivers (end of rains).
May 7–Oct. 20. Mid-Zambezi and lower Luangwa valley. 1200–1500 feet (dry season).
Oct. 21–Nov. 9. Up mid-Luangwa valley, Feira to Petauke (beginning of rains).
1905. Nov. 10, 1904–April 26, 1905. Petauke, east side of Luangwa valley. 2400 feet (wet season).

1905. April 27-May 20. Mbala Country, S.E. of Petauke.
3500 feet.
May 21-Aug. 31. Low ground in Luangwa valley.
1400 feet (dry season).
Sept. 1-10. Petauke to Lukashashi River.
Sept. 11-15. Edge of Mchinga escarpment to Mkushi.
4000 feet.
Sept. 16-Oct. 13. Ndola and district, N.W. Rhodesia.
4000 feet (early spring).
Oct. 14-28. Upper Kafue valley and Kapopo. 4000 feet.
Oct. 29-Nov. 24. Eastward across southern Serenji
district to edge of Mchinga's (beginning of rains).
1906. Nov. 25-Jan. 6. Petauke and district.
Jan. 7-14. Petauke to Fort Jameson.

SECOND EXPEDITION (1907 to 1908).

1907. Jan. 4-12. N.W. Rhodesia, Broken Hill to Kapopo,
upper Kafue. 4000 feet (wet season).
Jan. 13-28. Kapopo to Kansanshi. 4999 feet.
Jan. 29-Feb. 3. Kansanshi to Kambove, Congo Free State.
Feb. 4-Mar. 18. Kambove. 4500 feet.
Mar. 19-April 7. Upper Dikulwe valley. 3500-4000
feet.
April 9-16. High plateau between valleys of Dikulwe
and Lualaba. 4500 feet.
April 17-May 13. Low ground in valley of Kaluli and
Lualaba rivers. 2500-3500 feet (end of rains).
May 14-31. Upper Lualaba valley, high plateau.
4000 feet.
June 1-9. Upper Lualaba to Kambove.
June 10-28. Upper Lufira valley, 3500 feet.
June 29-July 16. Kambove.
July 17-24. Kambove to Lukafu, mid-Lufira valley.
3000 feet.
July 28-Sept. 18. Bunkeya. 3000 feet.
Sept. 19-27. Bunkeya to Ruwe.
Sept. 28-Oct. 17. Upper Lufupa river. 3500-4000 feet.
Oct. 18-23. Upper Lubudi river. 3500 feet (early spring,
first sign of the rains).
Oct. 24-31. Upper Lufupa river.
Nov. 1-6. Lower Lufupa to Ruwe.
Nov. 7-18. Ruwe to Kambove.
Nov. 19-Dec. 12. Through eastern Katanga, south of
bend of Luapula to English boundary, Serenji district,
N.E. Rhodesia.
Dec. 13-30. Serenji district. 4500 feet.
1908. Dec. 30, 1907-Jan. 2, 1908. From edge of Mchinga's
across Luangwa to Petauke.
Jan. 3-13. Petauke.

1908. Jan. 14-21. Petauke to Fort Jameson.
 Jan. 22-Feb. 6. Fort Jameson.
 Feb. 7-Mar. 31. Up mid- and upper Luangwa valley to Mirongo. 1500-2000 feet (height of rains).
 April 1-12. Up Mchinga escarpment to Chinsali and district. 4500 feet.
 April 13-May 20. Mid-Chambezi valley. 4000 feet (end of rains).
 May 21-26. Chambezi to Luena.
 May 27-June 20. Luena district and eastern shore of Lake Bangweolo.
 June 21-July 9. Chishi, Mbawala, and Chirui Islands on Lake Bangweolo. 3900 feet.
 July 10-22. Luwingu district. 4300 feet.
 July 24-31. Luwingu to Mporokoso. 4500 feet.
 Aug. 1-10. Upper Lofu valley. 4000 feet.
 Aug. 11-17. Lower Lofu valley. 3000-3500 feet.
 Aug. 18-27. High plateau between Lofu valley and Lake Tanganyika. 4000-5000 feet.
 Aug. 28-Sept. 3. Mporokoso.
 Sept. 4-10. Upper Kalungwisi valley.
 Sept. 11-17. Lower Kalungwisi valley.
 Sept. 18-26. High plateau, Kalungwisi district.
 Sept. 27-Oct. 1. Luwingu.
 Oct. 2-23. Luwingu to mouth of Chambezi.
 Oct. 24-Nov. 5. Mouth of Chambezi to Mansya river and Lake Young. 4500 feet.
 Nov. 6-9. Lake Young to Mpika.
 Nov. 10-23. Mpika to Fort Jameson. (First rains.)

Fam. NYMPHALIDÆ.

Subfam. DANAINÆ.

LIMNAS CHRYSIPPUS L.

A common insect everywhere but prefers open country and avoids very dense forest. The specimens are mostly of the type form with occasional individuals tending to var. *alcippus* Cram. I saw one specimen of the *dorippus* Klug form in the mid-Chambezi valley in May, and found it not uncommon a few miles above the mouth of the Lofu river, near Lake Tanganyika, but did not meet with it to the south of these localities.

TIRUMALA LIMNICE PETIVERANA Dbl. & Hew.

Occurs over the whole area except in the Zambezi valley, but is nowhere a common insect so far as my experience goes.

AMAUROS NIAVIUS L.

Sparingly in dense forest on the Lualaba river, iv. and v., and in similar localities on the Kalungwisi river, ix.

AMAUROS PSYTTALEA Plötz.

This species is represented by two males only, one from near Chensali, iv., and the other from the Lofu river, near Lake Tanganyika, viii.

AMAUROS HYALITES DANNFELTI.

Amauris dannfelti Auriv. Ent. Tidskr. xii. p. 196.

A common insect in more wooded localities in Katanga and in the northern portion of the plateau country in N.E. Rhodesia. The transparent spots of the primary, due perhaps to their more or less green background in nature, look pale green on the wing. I incline to the view that species of this type of *Amauris* rather than *Tirumala petiverana* have been the primary model of *Papilio leonidas* Fabr.

AMAUROS LOBENGULA KATANGÆ, subsp. n. (Plate I. fig. 1, ♂.)

Most nearly allied to *A. lobengula whytei* and *A. lobengula crawshayi* Butler. It differs from these in the colour, size and distribution of the ochreous area on the secondary. In *katangæ* this band of a deep ochreous colour is very broad, reaching, especially toward the inner margin, beyond the end of the cell. In contrast to its width, it extends as a very narrow tongue up to the middle of the costal margin, nearly, and in some specimens quite as narrow as in typical *lobengula* and very much narrower than in either of the two subspecies above quoted. The spots of the primary are pure white, thus agreeing with *A. l. crawshayi*, but in this case *katangæ* is easily distinguished by the dark colour of its secondaries. In the primary the spot in the cell and discal spot in area 2 are very large and well marked, more so than in any of the allied species. The female is a little larger than the male, but does not otherwise differ.

Length of primary 42 mm.

Type in British Museum.

11 males, 2 females, Kambove, Katanga, 7-27.ii.07.

This species frequents well wooded localities and does not differ from other species of *Amauris* in its habits.

Subfam. SATYRINÆ.

MELANITIS LEDA L.

A common forest insect throughout the country. As has been noted by other observers, it has, when settling on the ground, a habit of sitting aslant among dry leaves, etc.—which increases the difficulty of detection. Both species of *Melanitis*, more particularly the species next referred to, are addicted to taking a flight in the open just before sundown.

MELANITIS LIBYA Dist.

Also a common insect, in the Luangwa valley at least, frequenting the same localities as the foregoing, but it is not quite

so universally distributed. Has the same habits and is on the wing all the year.

GNOPHODES PARMENO Dbl. & Hew.

A common forest insect in the lower ground of the Congo basin. It has much the same habits as a *Melanitis*.

BICYCLUS SEBETUS Hew.

Not uncommon in the forests in the river-valleys of the Congo basin. It is on the wing all the year and is a difficult insect to catch in dense vegetation as it is very wary. It almost invariably settles on the ground, where it is extremely difficult to see. It seems, nevertheless, to be not infrequently attacked by lizards, which are common in these forest areas in the Congo basin.

MYCALESIS DUBIA Auriv.

Represented in the collection by two males from the Lubudi river, x.

MYCALESIS AURICRUDA Butler.

I took two males and one female of this species on the Lubudi river, x. It frequents dense forest.

MYCALESIS SANDACE Hew. ?

I took a few specimens of a *Mycalesis* which I refer with some hesitation to this species. It occurs sparingly throughout Katanga and N.E. Rhodesia west of the Mchinga escarpment.

MYCALESIS ENA Hew.

Occurs throughout the area under consideration, being especially common in the Luangwa valley. Dry-season specimens are scarce but were taken from April to June.

MYCALESIS SOPHROSYNE Plötz.

Five males and one female from the Lufupa and Lubudi rivers, ix. and x. All dry-season forms.

MYCALESIS SELOUSI Trim.

A common insect throughout the country especially in the dry season. I also took in various localities what I believe to be the wet-season form of this species. It is a smaller insect with well-marked eye-spots on the underside, and with the same waved transverse line across both wings which is characteristic of typical *selousi*. It is on the wing from January to March, whilst *selousi* occurs from March onwards throughout the dry season.

MYCALESIS SAFITZA Hew.

A common insect everywhere but scarce in the height of the dry season.

MYCALESIS ANYNANA VICARIA Thurnau.

Mycalesis vicaria Thurnau, Berl. Ent. Zeit. xlviii. 1903, p. 118.

Not uncommon in the Luangwa, Chambezi, and Lofu valleys at all seasons.

? MYCALESIS VULGARIS Butler.

Occurs sparingly but in a good many localities west of the Mchinga escarpment.

MYCALESIS NEBULOSA Feld.

Two specimens only, both from the valley of the Lualaba river, one v., the other x. It frequents dense forest.

MYCALESIS SAUSSUREI Dewitz.

I captured seven individuals of this species on the Lufupa river, x. They all differ somewhat from specimens from further north. The white band across both wings on the underside is broader and more distinct, but in spite of this is barely visible on the upper surface. A forest species.

MYCALESIS COOKSONI Druce.

Mycalesis cooksoni Druce, Trans. Ent. Soc. 1905, p. 251, pl. xiii. fig. 1.

I took a few individuals, which I attribute to this species, in patches of forest on the Lofu and Kalungwisi rivers.

MYCALESIS spp. ?

There are also two other species from several localities allied to the foregoing and to *danckelmanni* Rogenh.* They appear to be new, but it seems to me inadvisable to describe them in the present confused state of the whole genus.

MYCALESIS HAROLDI.

Mycalesis haroldi Druce, Trans. Ent. Soc. 1905, p. 252, pl. xii. fig. 2.

I captured two males and one female of this striking species on the Lufupa river, x. and xi.

HENOTESIA PERSPICUA Trim.

This species is common everywhere. As Marshall † has already pointed out, *H. simonsi* Butler is probably the dry-season form of this species. I found typical *simonsi* only in the very hot and dry river-valleys of the Luangwa and the lower Lofu near Lake Tanganyika. On the high plateau generally of N.E. Rhodesia and throughout Katanga the extreme dry-season specimens are somewhat intermediate between *perspicua* and *simonsi*.

* Ann. Hofmus. Wien, vi. p. 462, pl. 15. fig. 9 (1891)

† Trans. Ent. Soc. 1896, p. 562.

HENOTESIA PHÆA Karsch.

I took this somewhat uncommon species over a wide area in Katanga but nowhere very commonly. It was also not uncommon in the thickets on the shores and islands of Lake Bangweolo, vi. and vii.

PHYSCÆNEURA PIONE Godm.

A not uncommon insect in woodland (not forest) country over a wide area. It is only on the wing during the wet season and has a strangely feeble flight.

NEOCÆNYRA BERA Hew.

A rare insect in my experience, occurring sparingly in the Luangwa valley only, during the rainy season.

NEOCÆNYRA GREGORII Butler.

Represented only by two individuals captured on wooded hills near Fort Jameson, iii., and by two others from similar localities on the upper Chambezi river, iv.

NEOCÆNYRA COOKSONI.

Neocænyra cooksoni H. H. Druce, Trans. Ent. Soc. 1907, p. 77, pl. ii. fig. 1.

A common insect during the wet season in Katanga but not met with elsewhere. It is a woodland species.

YPTHIMA PUPILLARIS Butler.

? = *impura* Elwes & Edwards.

A very long series, taken at all seasons and in all localities, of what appears to be this species. It seems to pass by insensible gradations into individuals which correspond to the description of *impura* * Elwes & Edwards.

YPTHIMA ITONIA Hew.

This species is ubiquitous and is on the wing throughout the year.

Subfam. ACRÆINÆ.

PARDOPSIS PUNCTATISSIMA Boisd.

Fort Jameson, Luangwa and Chambezi valleys, i. to iv.

I took this species sparingly in the above localities in the wet season. It seems nowhere abundant and disappears apparently towards the west, as I did not meet with it in Katanga. It frequents woodland and has a weak floating flight.

ACRÆA NEOBULE Dbl. & Hew.

This seems a common species everywhere and I took it at all seasons. It prefers woodland but sometimes comes out into the

* 17. *impura* Elwes & Edwards, Trans. Ent. Soc. 1893, p. 23, pl. 3, fig. 48.

open. It flies very high for an *Acraea* and may often be seen sailing to and fro over the same spot some 10–12 feet from the ground.

ACRÆA ZETES L.

I found typical *zetes* common in Katanga, iii. to v., and again, x., xi. In Northern Rhodesia I took only a single male, viii., on the high plateau country to the south of Lake Tanganyika.

ACRÆA ZETES ACARA Hew.

I found this form replacing the typical one in the Lake Bangweolo district, Chambezi and Luangwa valleys, and the districts of the upper Kafue in N.W. Rhodesia. It seems to frequent rather more open country than the type form, which affects rather dense woodland or forest. It occurs at all seasons.

ACRÆA ASTRIGERA.

Acraea astrigera Butler, P. Z. S. 1899, p. 421, pl. xxv. fig. 5.

I met with a few individuals of this species on the Mansya river near Lake Young at the beginning of November, 1908.

ACRÆA ANEMOSA Hew.

A common insect during the wet season in the Luangwa valley. West of the Mchinga escarpment I took only two specimens, viz., in the Broken Hill district, ix. and xi. Both these approach the *arcticincta* form of Butler and have the spots of the fore wing much enlarged. To the north and west of these localities *anemosa* appears to be replaced by the next species. It has a very lazy flight and is easily captured. It frequents woodland.

ACRÆA WELWITSCHI Rogenh. (Plate I. fig. 2, ♂.)

I first met with this little-known insect on the upper Kafue river, N.W. Rhodesia, in October 1905, but took only a single female. Subsequently in Katanga I took four males on the Lualaba river, v., and a worn female on the Lubudi river, x. Eventually in 1908 I found it swarming in the Lake Bangweolo district, a new brood having obviously just emerged about the middle of June. I continued to take many specimens, some much worn, in the Kalungwisi and Lofu river valleys up to the middle of September. Strange to say, females appeared to be very rare amongst this dry-season brood until the end of September and during October, when all of the few individuals captured were females.

This large *Acraea* with its brilliant cerise coloration and heavy black margins is an extremely conspicuous object on the wing. It seems, as I shall endeavour to show later, to have influenced the pattern of other *Acraeas* in the same neighbourhood.

As the species is so little known in collections and the male seems to be undescribed, it is perhaps as well to give a full

description of it. The males vary a good deal especially in the black suffusion over the wings.

The male genitalia, though of the same character as those of *anemosa*, are much smaller and more slender.

UPPERSIDE.—*Primaries.* The entire base, including the proximal half of the cell, black. The costa narrowly black. A moderately broad black apex narrowing rapidly as it approaches the posterior angle. A narrow black discocellular streak. A little beyond end of cell a black band of confluent spots extending from costa to second submedian. Sometimes a separate spot in area 3. A well-defined spot in 2 immediately below extremity of cell. A small paired discal spot (sometimes two pairs) in 1. Ground-colour bright cerise, sometimes becoming orange-ochre toward apex and outer margin.

Secondaries. The base broadly black, but more or less covered with scattered whitish hairs, a broad black outer margin inwardly somewhat serrated; ground-colour as fore wing, sometimes a trace of four or five small black spots around extremity of cell.

UNDERSIDE.—*Primaries* as upperside, but black of apex and outer margin narrower; a small greenish-white spot at base of costa; apex flushed internally with whitish and marked with ochreous submarginal internervular streaks. Ground-colour paler.

Secondaries. Black base encloses five to seven small greenish-white spots; three such spots along narrowly black inner margin; a streak of same colour follows outline of anal angle; black outer margin encloses seven small greenish-white spots (paired in 1c); discal area pinkish-white outlined along its basal inner and outer marginal edges with somewhat arrow-shaped internervular spots of brick-red colour.

Fringe of both wings black with internervular patches of white.

Palpi ochreous; *thorax* black; *abdomen dorsally*, black except last three segments which are ochreous; *laterally*, ochreous; *ventrally*, narrowly black enclosing some whitish spots.

Length of primary 34 mm.

The female, already described by Rogenhofer, differs chiefly in reduction of the black basal area which, in secondaries at least, is nearly absent, and in the ochreous, not cerise, ground-colour of primaries. The female abdomen is deep ochreous with laterally placed white spots and is nowhere black.

ACRÆA EGINA Cram.

I took this insect sparingly on the upper Kafue river in October and on the Lualaba river in April and May, but found it common in the Lake Bangweolo district in June and July, especially on the islands in that lake. It also occurred in the Kalungwisi and Lofu river valleys in August and September. These specimens exhibit characters somewhat intermediate between the type form and *areca* Mab. The majority have more or less well-developed scarlet internervular streaks in the apical and outer-marginal portions of the primaries. I found this insect,

which is very brilliant on the wing, to have a very powerful flight and to be somewhat less easy to catch than most *Acræinæ*. It frequents the neighbourhood of rather dense forest or thickets.

ACRÆA PERENNA Dbl. & Hew.

This species is represented in the collections by a single male from the Lufupa river, x.

ACRÆA CEPHEUS L.

A single female captured on the same day and in the same place as the last species.

ACRÆA BÜTTNERI.

Acræa büttneri Rogenh. Ann. Hofmus. Wien, iv. p. 553, pl. 23. fig. 8.

Of this somewhat rare species I took five specimens at Kansanshi, N.W. Rhodesia, i., and four more on the Lufupa and Lubudi rivers, x. I did not observe it elsewhere. It is a woodland species somewhat resembling, on the wing, *atolmis* Westw., especially the wet-season form of that species.

ACRÆA VIOLARUM ASEMA Hew.

Not uncommon in the Fort Jameson district and on the Broken Hill plateau. It prefers open country and seems to avoid the low-lying Luangwa valley. The above localities appear to be the northern limit of its range, as farther north it is replaced by the next subspecies. At Ndola, N.W. Rhodesia, 21 & 23.ix.05, I captured one specimen of each form.

ACRÆA VIOLARUM OMRORA.

Acræa omrora Trim. P. Z. S. 1894, p. 24 note.

Acræa asema Trim. P. Z. S. 1891, p. 68, pl. 8. figs. 9, 10, 10a.

Acræa violarum umbrata Wichgraf, B. E. Z. liii. p. 242, pl. vi. figs. 5, 6 (1908).

This is a fairly common species throughout the year on the high plateau of N.E. Rhodesia from the Serenji district northwards, and also occurs, but less commonly, in Katanga. The specimens recently figured by Wichgraf under the name *umbrata** are wet-season specimens and much more heavily marked than the dry-season ones. A long series taken at all seasons, however, makes it highly improbable that they are distinct species.

ACRÆA MIRIFICA. (Plate I. fig. 3, ♀.)

Acræa mirifica Lathy, Trans. Ent. Soc. 1906, p. 2, pl. i. fig. 2.

I found this highly remarkable species not uncommon but extremely local on the higher plateau country from Serenji to Lake Bangweolo. It seems to be entirely confined to patches of marshy ground generally marking the sources of streams and well described as "sponges" by Livingstone in his Last Journals. This insect has a very weak flight, but is extremely tough and when pinched between finger and thumb exudes a pale green fluid.

* *Loc. cit.*

The males of this species, of which I have taken over sixty individuals, all differ from the figure of the type by the possession of a row of seven minute internervular marginal red spots on both sides of the outer margins of the primaries, and by the absence of white submarginal spots on the upperside of the secondaries. The band on the primary is also pale golden, not whitish.

Another specimen, however, which I have had an opportunity of examining in the Tring Collection, from the same locality as the type, viz. Bihe, Angola, agrees in the main with my specimens. We must, therefore, conclude that the type specimen is a somewhat abnormal one.

The females, which are somewhat variable, differ greatly from the males, especially on the upper surface.

♀. UPPERSIDE.—*Primaries*. Ground-colour pale golden, more or less suffused towards base with dusky scales; base of costa red becoming orange towards apex; a narrow black apex and a narrow line of black on outer margin enclosing seven minute internervular brick-red spots as in the male. A spot in middle of cell and a well-marked discocellular spot; immediately below another spot in area 1 *b*. In some specimens there are also submarginal spots in areas 3, 2, 1, of which that in 2 is placed near the median nervure.

Secondaries. Ground-colour as primaries with a well-defined medium black margin, some of underside spots represented, especially discocellular and four spots around end of cell.

UNDERSIDE.—*Primaries* as upperside but ground-colour somewhat more fulvous; black apex reduced; inner portion of apex and whole of *secondaries* have the same shining golden ground-colour as the male. Other markings of secondaries as in male.

Fringe of primary dusky, of secondary pale golden; *palpi* ochreous; *vertex* and anterior portion of *thorax* bright red; *abdomen*, above, black marked laterally with a row of small red spots, below, ochreous marked black and red in mid-ventral line.

The relationship of this peculiar species to other *Acræinæ* is of considerable interest. In the first place, the rudiment of a third internal nervule on the secondaries is well-marked for three-quarters of its distal portion, only fading away as it reaches the base. The somewhat long hairs which are placed upon all the nervules on the under surface are also distinctly visible. The general resemblance of the female of the above described species to *A. anacreon* Trim. and its allies led me to examine them also. I find this nervule to be well-marked in *anacreon* Trim., *induna* Trim., *bomba* Grose-Smith, and *wigginsii** Neave, and a distinct trace of it in *violarum* Boisd. and its forms. This character seems to be absent from all other Ethiopian or Oriental *Acræinæ*, though traces of it frequently remain in the pattern usually as a paired

* *Acrea wigginsii* Neave, Nov. Zool. xi. p. 326, pl. i. fig. 3 (1904).

spot on the margin. In *Planema* the former presence of this nervule is indicated by a *double* internervular streak in area 1c.

On turning to the South American genus *Actinote*, I was extremely interested to find that this nervule is more or less well represented in all the species that I examined. Further, an examination of the tarsus of the fore-leg showed that in *mirifica*, though there are traces of two tarsal joints compared with one in *Actinote*, they are very much more stunted than in other African *Acræinæ*, including *anacreon*. In addition to the above anatomical characters, we have the fact that the male of *mirifica* is, on the upper surface, extremely like an *Actinote* both in pattern and coloration. It is perhaps, therefore, fair to suggest that this interesting species possibly represents a link between the *Acræinæ* of the Old and New Worlds.

ACRÆA INDUNA Trim.

I took this species in fair numbers in many localities, especially where there were large stretches of woodland. It was particularly common in the Chambezi valley and Lake Bangweolo district in May and June. It is on the wing at all seasons except apparently during the height of the dry season in August and September, though usually found sparingly even then.

The wet-season females of this species also exhibit a tendency to general duskiness.

Until more evidence is forthcoming this species should, I think, be kept distinct from *A. bomba* Grose-Smith.

ACRÆA ACRITA.

Acræa acrita Hew. Exot. Butt. *Acræa*, pl. iii. fig. 18.

Acræa ambigua Trim. P. Z. S. 1891, p. 70, pl. ix. fig. 11.

Some confusion among systematists seems to exist with regard to this striking and variable species, more especially between its seasonal phases and geographical races.

A very long series, taken on a wide area, demonstrates the existence of two well-marked geographical races.

(1) *Acræa acrita acrita* Hew.

The typical form is the Eastern race of this species, characterised by having a narrow black apex to the primary from 2-4 rarely 5 millimetres wide. The spots on primaries are always well developed. My series of this form, 120 specimens, comprises every gradation between the extremely brilliant dry-season specimens and the melanic wet-season ones. Extreme examples of the wet phase are on the upper surface more or less uniformly dusky in the female, while the male has the greater portion of the secondaries suffused with coal-black, contrasting greatly with the brilliantly coloured primaries.

Thurau figures a male of the wet-season phase of this race in the B. E. Z. for 1903, p. 129, pl. ii. fig. 8 as var. *aquila*, and the

underside of an extreme dry-season specimen is well figured by Trimen, P. Z. S. 1894, pl. iv. fig. 4.

I took this form sparingly in the Broken Hill district, and commonly in the Luangwa and Chambezi valleys. To the west of these localities, as we shall see, it is replaced by another race. The typical form of *acrita* appears to extend up the eastern side of Africa from the Transvaal to a little north of the latitude of Mombasa.

(2) *Acreea acrita ambigua* Trim. P. Z. S. 1891, p. 70.

This appears to be the western or perhaps central race of the species. My collection contains a long series, some 105 individuals, captured in the Bangweolo, Mweru and Tanganyika districts and less commonly in Katanga. This race is characterised by the breadth of the black apex to the primaries, normally 6-7 mm. wide, and by a number of other characters already pointed out by Mr. Trimen (*loc. cit.*). Mr. Trimen has kindly allowed me to examine the male mentioned by him (*loc. cit.* p. 71) as captured by Mr. Selous near the Chobe river, Upper Zambezi. I find that my more northern specimens differ only in the very much slighter development of the pale subapical patch to the primary. This pale area appears in the male to be due to the absence of scales rather than to the presence of white pigment. Wet-season males are rather more heavily marked than the dry ones, which frequently have the spots of the primaries much reduced. Occasional individuals of this latter type have the black apex nearly if not quite as narrow as a heavily tipped specimen of the type race. They can, however, be distinguished at a glance, in these cases, by the great reduction, sometimes disappearance, of the spots on the primary and a general reduction of all the markings of both wings. An extreme of this sort is figured by Thureau, *loc. cit.* pl. ii. fig. 9, as var. *utengulensis*. Dry females, except that they are duller coloured, do not differ much from the males. With regard to wet females of this race it is unfortunate that the specimen figured by Trimen is probably somewhat aberrant. I have taken the wet-season phases only in Katanga; I did not have an opportunity of doing so in the Lake Bangweolo district, etc. These wet Katanga females, four in number, resemble Mr. Trimen's figure in possessing a well-marked white subapical bar, but are larger and the red colour is entirely replaced by a dusky grey shade.

This western race of the species appears to extend from the Damara-land localities given by Mr. Trimen across the Upper Zambezi through the south-eastern portion of the Congo State to the districts of Lakes Bangweolo, Mweru, and Tanganyika. There is also one specimen of this race in the British Museum from the Victoria Nyanza, already referred to by Mr. Trimen. The fact that typical *acrita*, which occurs in the mid-Chambezi valley in N.E. Rhodesia, is replaced by *ambigua* on the north-eastern shore of Lake Bangweolo is highly remarkable, there being

no geographical peculiarity to account for this. The representative of what is perhaps a third race of *acrita* is figured by Weymer, Iris, Dresden, 1903, p. 225, pl. ii. f. 4, under the name *acrita bella*. From the fact that the localities of *pudorina* Staud. and those of the eastern race of this species appear to overlap, without apparent gradations between them, it is possible that the former should be treated as a distinct species. I have, however, not been able to detect differences in the genitalia between this and the typical form. *A. cheribula* Oberth., which is treated by Professor Aurivillius as a form of *acrita*, is, as we shall see immediately, a quite distinct species.

Both races of *acrita* are on the wing throughout the year. They frequent woodland and wooded hill-sides. They fly rather low, but have an extremely steady and unusually *straight* flight for an *Acraea*. If once startled they fly considerable distances in a straight line, without deviating to right or left.

ACRÆA LUALABÆ, sp. n. (Plate I. fig. 4, ♂.)

Fulvous orange with apex of primary and spots black. Allied to *acrita* Hew.

♂. *UPPERSIDE*.—*Primary* fulvous orange, with a well-defined black apex and the following black spots:—one in cell; a discocellular; spots in areas 3 and 5 near internal margin of black apex; a large spot in 2 below extremity of cell; a spot in 1 *b* near outer margin, another in 1 *b* below cell near base.

Secondary. Ground-colour as primary; a black basal patch and the following black spots:—one in cell; a discocellular; a spot in 2 at junction of 1st submedian with median; two spots below costa and seven around end of cell, that in area 5 evanescent; a fenestrated black outer margin enclosing seven circular spots of ground-colour.

UNDERSIDE.—*Primary* as upperside but without black apex.

Secondary. Black basal area of upperside replaced by whitish enclosing three basal spots, also one in cell near its base and one each in 1 *a* and 1 *b* immediately below it; there is further a small spot between costa and precostal; also the following reddish streaks: one along base of costa, one passing longitudinally through cell-end, and three others connecting the two rows of spots lying in 1 *a*, 1 *b*, 1 *c*.

Fringe of primary dusky, of secondary dusky becoming grey at anal angle and along inner margin; *palpi* pale ochreous tipped black; *thorax* black; *abdomen*: first three segments black, the 3rd bearing an ochreous lateral spot, the remainder dull fulvous; the last segment covered with long hairs dorsally blackish, ventrally ochreous.

Length of primary 22 mm.

Type ♂ in British Museum. Lualaba river, 18.iv.07.

Cotype ♂ in Hope Coll., University Museum, Oxford. Lualaba river, 22.iv.07.

This species at first sight might be taken for *acrita* Hew., which

is evidently its nearest ally, but it differs in several particulars. Besides being a notably smaller insect, it is characterised by the presence of two subapical spots in primary which never occur in *acrita* and by a different arrangement of the submarginal spots in areas 3, 4, 5, 6 of secondary. *A. lualabæ* also differs in coloration and shape of the abdomen.

ACRÆA CHÆRIBULA.

Acraea chæribula Oberth. Ét. d'Ent. xvii. p. 19, pl. ii. fig. 16.

Acraea acrita var. *chæribula* Auriv. Rhop. Afr. p. 96.

I found this species plentiful throughout the high plateau country of Northern Rhodesia and Katanga, especially in the wet season, though it occurs throughout the year. It frequents woodland, particularly wooded hills, and is rather active on the wing, but easily captured as it flies very low and is by no means shy.

This insect has been confused by some authorities with *acrita* Hew., but is unquestionably distinct. I have no doubt on this point, having taken some 200 individuals at all seasons and having an even larger series of *acrita* with which to compare it. It may be distinguished externally by its uniformly smaller size, very deep black apex which is constant at all seasons, and black basal patch on uppermost part of base of secondaries. It differs also in colour, being, especially in the bright dry-season specimens, of a clear orange-red, never the rosy scarlet of *acrita*. The spots on primaries are further never enlarged in the wet-season as in *acrita*. Finally, the male genitalia differ considerably from those of *acrita*.

ACRÆA PERIPHANES Oberth.

This species is exceedingly abundant in plateau country everywhere west of the Mchinga escarpment. It does not apparently occur in the Luangwa valley. A very long series of this species of some 250 specimens exhibits very clearly what an astonishingly variable one it is. It appears to be in a highly unstable condition and to be in process of forming two or more well marked varieties. The chief of these are: (1) resembling the type figured by Oberthür Ét. d'Ent. xvii. p. 20, pl. ii. fig. 23; (2) a form in which the whole outer margin of the secondaries is suffused with black on both surfaces. On the underside the rectangular outer marginal spots of the type form are more or less overwhelmed and remain only as small triangular patches in the black ground.

The fringe in this form is also blackish, instead of whitish as in the type form. This character of a heavy black hind margin is usually, though not necessarily, associated with a rose-coloured suffusion of, at least, the secondaries. It is possible that this form exhibits a mimetic approach to the above mentioned *A. welwitschi* Rogerh., which is so conspicuous for its bright cerise colour and heavy black margins. I had for some time considered this form to be a seasonal one, but this appears to be not so. Though the latter is perhaps a trifle the commoner in the dry season, both forms occur in nearly equal numbers throughout the year.

A third form which may belong to both the above, so far as its hind margin is concerned, is characterised in the primary by the absence of the row of five spots beyond the end of the cell. This absence of spots coincides with a considerable increase of size in the basal spots of the primary, with the result that examples of this form have a marked resemblance to *acrita* Hew. A further complication which occurs in small numbers throughout all the forms, is the presence of a more or less heavy black apex to the primary. It must be also remembered that intermediates between all and each of the above forms occur. Further, I have been unable to find any differences in the genitalia of the extremes of the various forms, although the latter are so unlike as to have the appearance of distinct species.

ACRÆA ACUTIPENNIS.

Acraea acutipennis Iathy, Trans. Ent. Soc. 1906, p. 2, pl. i. fig. 3.

The collection contains four males of this recently described species, one captured on the Lualaba river, iv., and three others on the Lufupa and Lubudi rivers, x., xi. One specimen is very much more heavily marked than the type, especially on the secondaries, where many of the spots are "run." The abdomen also is black.

ACRÆA LACTEA, sp. n. (Plate I. fig. 7, ♀.)

A very pale species covered on upper surface with whitish scales.

♀. *UPPERSIDE*.—*Primary*. The whole wing, except for a moderate dusky apex, thinly covered with whitish scales; a faint discocellular dusky spot; two similar ones in 1 *b* and 2, the latter below end of cell, the former nearer the margin. A very narrow line of black along outer margin from black apex to posterior angle.

Secondary. More heavily scaled with whitish through which under-surface markings are visible; some of the spots of discal row slightly pigmented with dusky on upper surface. A narrow outer-marginal black line somewhat invading the wing along the veins.

UNDERSIDE.—*Primary* as upperside but apex greyish.

Secondary. Pale cream ground with following black spots:—a precostal; two in cell; two each in 1 *a*, 1 *b*, 1 *c* near base; a discocellular; two below costa and a discal row of seven of which those in areas 2 and 4 are placed nearer cell and those in 1 *c* and 3 are large and of irregular shape; those in 1 *a*, 1 *b*, 1 *c*, and 4 are connected with spots nearer the base by rose-coloured internervular streaks. The fenestrated black outer margin encloses seven pale ochreous spots with a trace of an eighth at anal angle. The inner edge of this margin is marked by a series of brick-red internervular streaks which increase in size toward anal angle.

Tringe of both wings dusky.

Palpi very pale ochreous nearly white; *thorax* black with two

white spots on vertex; *abdomen* above black, the 3rd to 6th segments each having a small white lateral spot; last segment fulvous below with a lateral fulvous line.

Length of fore wing 28.5 mm.

Type ♀ in the British Museum. Captured near the Belgian Post of Lulua, upper Lufupa river, 13.ix.07.

Cotype ♀ in Hope Coll., University Museum, Oxford. Captured on lower Lufupa river, 1.xi.07.

It is with some hesitation that I describe and name this curious species from females only, but I am quite unable to find any male in my own or any other collection to which it could belong. It would appear to have no close relationships, but the discovery of the male would probably be of assistance on this point. From the fact that the discal spots of the primary make a line at right angles to the costa, it must according to Professor Aurivillius' list be placed in the *acrita* group.

ACRÆA NOHARA CHAMBEZI, subsp. n. (Plate I. fig. 5, ♂.)

I captured in the Chambezi valley and near Lake Young at the end of October and beginning of November 1908 a small series of what appears to be a new northern race of *A. nohara* Boisd., which in some particulars is an extreme form of the *halali* Marsh. race of that species.

It is much larger than *halali* Marsh., of a bright rose-colour, and differing from it in the still further reduction of many of the markings, especially of the dark outlines to the veins on the apex and outer margin of the primaries. In the secondaries on the contrary the black margin is rather heavier on the average than in *halali*.

In the secondaries also, the three spots in the discal row in areas 1 *b*, 1 *c* and 2 form a straight line, thus distinguishing *chambezi* from *halali* at a glance.

In the presence of a discal spot in area 1 *b* of primary and in area 3 of secondary, *chambezi* agrees with *nohara* and differs from *halali*.

Except for two obviously dwarf individuals the average length of the primary is 27 mm., compared with about 25 mm. in *nohara* and 23 in *halali*.

The female differs only in the colour of the upperside of the primaries, which is tinged with ochreous and lacks the bright rose-red colour of the male.

Described from twelve males and two females.

Type ♂ in the British Museum. Chambezi valley, 28.x.08.

Type ♀ and cotypes in the Hope Coll., University Museum, Oxford.

ACRÆA ATOLMIS.

Acræa atolmis Westw. Oates' Matabeleland, p. 343, pl. F. figs. 3, 4.

I took this brilliantly coloured species commonly in the Broken

Hill district, N.W. Rhodesia, ix. and x. 1905, and in Katanga I found it plentiful in the Lualaba valley, x. and xi 1907. Some of the wet-season females from the last-named locality are nearly black. It is a somewhat local species, frequenting nevertheless rather varied country, as I have taken it both in woodland and open grassy plains. I also captured a few individuals in the lower Chambezi valley, N.E. Rhodesia, x. 1908.

ACRÆA LEUCOPYGA.

Acræa leucopyga Auriv. Ent. Tidskr. 1904, p. 92, fig. 32.

I took this species in the Luangwa valley, on both my expeditions, from January to March. The specimens are consequently all wet-season ones, and differ a little from Prof. Aurivillius' figure of the type which appears to be a dry-season specimen. My specimens are smaller and have heavy black margins of varying width to the secondaries. The females also, as in so many other wet-season *Acræinae* in this part of Africa, are very dull-coloured and have a varying amount of dusky suffusion over the base of both wings. The females further have the whole of the abdomen black with white lateral spots and lack the white apical segments described by Aurivillius. This character is, however, well marked in the males.

I took this species sparingly, ten males and eight females, in the Luangwa valley only. It has the same low flight as *oncaea* Hopff. and somewhat resembles it on the wing.

ACRÆA INTERMEDIA,

A. intermedia Wichgraf, B. E. Z. liii. 1908, p. 241, pl. 6. figs. 3, 4.

I took three males of this recently described species on the Lualaba river, iv. and v. 1907, and subsequently a very dry female on the Kalungwisi river, ix. 1908. This specimen has all the markings much reduced, and a mere trace of the subapical white is figured in Wichgraf's specimen.

ACRÆA MIMA, sp. n. (Plate I, figs. 8, 9, ♂, ♀.)

Allied to *A. rhodesiana* Wichgraf, B. E. Z. liii. 1908, p. 240, pl. 6. figs. 1, 2, but with a black, white-barred apex to primary. The discal spots of 1*b* and 2 of primary, in both species, make a line perpendicular to the hind margin, bringing them into group III, subgroup 7 of Professor Aurivillius' Catalogue, near *A. caldarena* Hew.

UPPERSIDE.—*Primary*. Apical portion of wing suffused with black, deep black at tip, becoming a dark greyish toward discal area. This dark suffusion covers rather more than the distal half of the cell on the costal margin and on the outer margin becomes reduced to a narrow dark line as it approaches posterior angle. Remainder of wing of a bright salmon-orange, scattered at base with some dusky scales and bears following black spots: a large spot within cell; a discocellular; beyond extremity of cell

a row of five black confluent spots extending to 2nd submedian, the last distinct from the row: immediately beyond this row and between it and deep black apex, is a well-defined white bar, of about the same length as the row of black spots and 4 mm. wide; a small spot in 1 *b*, a little proximal to junction of median with 1st submedian; two larger spots in areas 2 and 1 *b*, making a line perpendicular to hind margin, and placed a little distal to end of cell.

Secondary. Salmon-orange ground-colour as primary: base suffused with dusky, especially toward inner margin, somewhat obscuring spots in this area; ground-colour with black spots of which best defined are: one immediately above middle of cell; two within cell; a discocellular; a discal row of seven around cell end, of which 4th and 6th are placed more proximally than others: a well-defined, rather narrow outer margin narrowing to a fine line at anal angle.

UNDERSIDE.—*Primary* as upperside but black apex replaced by ochreous except along apical portion of costa which is pale yellow; ground-colour pinkish ochreous; two additional small spots near base of costa of which the more proximal is the larger.

Secondary. Base flushed pink; ground-colour bright ochre; spots as upperside with following additions:—one between costal and precostal; three basal spots; one above, one below and two within cell all outlined with pale yellowish; discal row around cell-end has two additional ones towards inner margin; black outer margin encloses seven pale greenish semilunar spots.

Fringe grey, more pronounced on secondaries; *palpi* ochreous; *vertex* and *thorax* above bright rufous; *abdomen*: first three segments black, 2nd and 3rd with an ochreous lateral spot, remaining segments fulvous somewhat paler below.

Length of primary 30 mm.

The female differs from the male only in still greater suffusion of black over primaries and greater width and definition of white bar, which is 5 mm. wide. The abdomen is also entirely black with creamy white lateral spots and ochreous ventral lines. One female is a melanic aberration being much suffused with black, the spots "run" and the subapical white bars are much reduced.

Type ♂ in British Museum. Serenji district, N.E. Rhodesia, 18.xii.07.

Type ♀ in British Museum. S.E. border of Katanga, Congo State, 13.xii.07.

Cotypes in Hope Coll., University Museum, Oxford, from the same localities.

This handsome species is evidently nearly allied to *A. rhodesiana* Wichgr., but differs from it in the presence of a broad black apex and strongly marked white subapical bar, especially in the male. In a male of *rhodesiana* in the British Museum, the colour of the abdomen also differs, being ochre-brown throughout with five lateral spots instead of two. *A. mima* may possibly prove to be

a mimetic race of *rhodesiana*, but until there is more evidence on the point, I think it should stand as a distinct species.

I captured four males and three females of this species, two in the extreme south-east corner of the Katanga region of the Congo State, and the remainder over the British border in the Serenji district of N.E. Rhodesia, xii. 1907. It was flying about woodland and old native gardens and had a fairly strong and steady flight. Owing to its rosy colour when fresh it bears on the wing a strong resemblance to *Mimacraea marshalli* Trim., more so than to *A. encedon* or *Limnas chrysippus*.

ACRÆA DETECTA, sp. n. (Plate I. figs. 6, 6 a, ♂.)

This species is allied to *A. caldarena* Hew., which it closely resembles in general appearance. The ground-colour is much more fulvous and is without the pinkish tinge of that species except in some of the very dry specimens. The primaries have a more rounded apex and are markedly less heavily scaled than in *caldarena*. Though of the same general character there are some important distinctions in the genitalia of these two species. The ventral harpes of *detecta* are broader and much more rounded than those of *caldarena*. The penis is also very characteristic, in *detecta* being very slender, curved and with a distinct barb at the tip. In *caldarena* it is a stout, straight organ and lacks a barb (Pl. I. fig. 6 b). Owing to the fact that both of these species often die with the penis extruded, it is frequently possible to detect this latter character without dissection.

♂. UPSIDE.—*Primary*. Much as *caldarena* but the black apex usually somewhat narrower and inwardly less well defined. Spotting variable and often much reduced. A well marked spot within cell and a discocellular always present. One, two, or three subapical spots (occasionally four in females) form a row near inner edge of the black apex. A small spot in area 1 b, below cell near its middle (often absent). Of the two spots in areas 1 b and 2 (the latter sometimes absent) which lie below end of cell, the former is placed a little *distally* to the latter (*not immediately below it or a trifle proximally to it as in caldarena*). As regards this character, *detecta* is intermediate in markings between the two groups of which *caldarena* and *acrita* may be taken as typical. There also is occasionally a small submarginal spot in 1 b.

Secondary much as in *caldarena* but more rounded, the basal black better defined. The arrangement of the spots also differs but is best described from the underside.

UNDERSIDE.—*Primary* as upperside but without the black apex.

Secondary. Spots on the whole as in *caldarena* but larger and more rounded, this is especially noticeable in the more distal of the two spots within the cell, which is never elongated as in *caldarena*. Of the spots in the discal row, that in area 5 is much more *distally*, that in area 2 more *proximally* placed, giving a very different appearance to this row. The basal pink

flush is less extensive than in *caldarena*, and the cream-coloured spots enclosed in the fenestrated black line forming the hind margin are somewhat wider and deeper.

The females of this species are less easily distinguished from those of *caldarena* but exhibit the same characteristics in the distribution of spots. They are very variable in colour and exhibit the same tendency to duskiness in the wet season as do those of *caldarena*, and also often have a whitish, lightly scaled subapical area. Specimens of *detecta* differ a good deal in size but are on the average considerably smaller than the *caldarena*. The species is described from 15 males and 11 females, all from the Luangwa valley.

Type in the British Museum; cotypes in the Hope Coll., Oxford.

I found this species in fair numbers in the Luangwa valley especially in the wet season. It occurs side by side with *caldarena*, and indeed for a long time I did not distinguish the two species.

ACRÆA CALDARENA.

Acraea caldarena, Hew. Ent. M. Mag. xiv. p. 52 (1877).

This species was abundant in the Fort Jameson district and the whole Luangwa valley. It occurred sparingly on the Alala plateau between the Luangwa river and Broken Hill, but I did not take it to the north of the Chambezi river, in N.E. Rhodesia, nor anywhere in Katanga. Within its range it is equally common either in woodland or in the open. It has a weak flight and keeps near the ground. It is on the wing at all seasons but is scarcer in the dry season when it is usually of a brighter colour, some specimens from the hot dry Luangwa valley being a peculiar shade of salmon-pink.

ACRÆA ATERGATIS Westw.

Sparingly in the Broken Hill district and in the northern portion of N.E. Rhodesia. Common in Katanga. Does not occur in the Luangwa valley or apparently east of it. It is on the wing all the year except in the height of the dry season, vii. and viii. Much resembles *A. atolnis* Westw. on the wing, and frequents rather open country.

ACRÆA AXINA Westw.

Fairly common between Tete on the Zambezi and Fort Jameson, ii. and iii. One female was taken on the Alala plateau, xi. These localities seem to be about the northern boundary of the species.

ACRÆA ONCÆA Hopff.

Abundant at all seasons in the Luangwa valley and to the east of it. Somewhat local west of the Mchinga escarpment, but fairly common in the Lake Bangweolo district. Not met with in Katanga. This species furnishes another instance where the

females exhibit a marked tendency to melanism in the wet season. Many females also have a more or less well marked subapical white bar.

ACRÆA NATALICA Boisd.

A common species everywhere and at all seasons, more especially in the Luangwa valley where it is quite the most dominant of all the larger *Acræinæ*. Dry-season specimens, especially from the mid-Zambezi and lower Luangwa, are often much smaller and more brightly coloured. Both this species and *A. anemosa* Hew. are closely mimicked by some remarkable moths of the genus *Hibridodes*. Of these there was one, *H. crawshayi* Butl., which I took pretty commonly in the Luangwa valley during the rains. This insect has not only the markings of an *Acræa*, especially on the underside, but hangs on grasses etc. in identically the same attitude.

ACRÆA RAHIRA Boisd.

I took two specimens of this species on the Alala plateau, ix. 1905, and subsequently found it common in swamps in the valley of the Chambezi, iv. and v. It seems to be confined to swamps and marshy ground, which accounts for its being very local. Its flight is very feeble. The majority of my specimens are markedly paler in colour than those from S. Africa.

ACRÆA SERENA Fabr.

Ubiquitous and on the wing all the year. Especially abundant in hot low-lying regions and particularly frequents the clearings of old native gardens, etc.

ACRÆA VENTURA Hew.

A fairly common species in the open country of the high plateau from Broken Hill to Tanganyika. Not taken in the Luangwa valley or in Katanga. It is on the wing all the year.

ACRÆA VINIDIA Hew.

This little species is common everywhere and at all seasons, especially in hot low-lying localities.

ACRÆA SOTIKENSIS E. M. Sharpe.

This species does not occur in the Luangwa valley or the Broken Hill district, but is common west of the Mchinga escarpment and in Katanga. It is a woodland and forest species with rather a swift flight for its size. Some specimens, especially those from Katanga, have the subapical bar orange-red like the ground-colour, instead of yellow as in the type.

ACRÆA BONASIA Fabr.

Not uncommon in the valleys of the Kalungwisi and Lofu rivers in N.E. Rhodesia and in the Lualaba valley in Katanga. It seems to be confined to dense forest. These specimens belong to the type form rather than to *alicia* E. M. Sharpe, the eastern race of the species.

ACRÆA CABIRA APECIDA.

Acraea apecida Oberth. Ét. d'Ent. xvii. p. 24, pl. ii. fig. 15.

Not rare in the Luangwa valley during the rainy season but not taken elsewhere except near Kambove, Katanga, ii. & iii., where it was scarce. A forest species.

ACRÆA PHARSALUS Ward.

Not uncommon throughout Katanga from November to April. Not taken in Northern Rhodesia.

ACRÆA ENCEDON L.

I took this everywhere. The type form is perhaps the commonest, though not much more so than *daira* Godm. & Salv. The *lycia* Fabr. form occurs rarely in Katanga and more commonly in the valleys of the Kalungwisi and Lofu rivers in N.E. Rhodesia. Some very large brilliantly coloured specimens of the type form were taken on the Lualaba. On the islands on Lake Bangweolo all the specimens taken, both of the type form and of *daira*, are large, brightly coloured and heavily marked, the spots in areas 1 b and 2 of primary being much "run" and enlarged.

ACRÆA sp. near *PENELEOS* Ward.

A single specimen of the species which has been recorded from several parts of Central Africa under this name, but is probably not identical with that species. This specimen, a male, was captured on the Lubudi river, West Lualaba district, 19.x.07.

ACRÆA ESEBRIA Hew.

Represented by a single male, captured in dense forest, 23.x.07, between the Lufupa and Lubudi rivers.

PLANEMA POGGEEI Dewitz.

I took several specimens of this handsome *Planema*, ix. 1908, in some dense forest on the Kalungwisi river, N.E. Rhodesia.

PLANEMA MONTANA Butler, P. Z. S. 1888, p. 91.

P. aganice var. *montana* Auriv. Rhop. Æth. p. 121.

I took a single pair of this species in a patch of dense forest, a little north of the Lofu river on the Tanganyika plateau, viii. 1908. It has a sluggish floating flight.

PLANEMA MACROSTICHA.

Planema macrosticha Beth.-Baker, Ann. N. H. (8) ii. p. 472 (1908).

I have a single female *Planema* in the collection which I attribute, with some doubt, to this species. There is a general resemblance in the distribution of markings to those of the male type, the bands across both wings being however whitish. It was captured on the Lualaba river, v.

Subfam. NYMPHALINÆ.

LACHNOPTERA IOLE Fabr.

This species occurred sparingly in patches of dense forest in the western portion of the basin of the Lualaba, but I did not observe it elsewhere. It is not unlike *A. phalantha* Drury on the wing, but is distinguishable by its larger size and clearer coloration.

ATELLA PHALANTHA Drury.

I found this insect ubiquitous and at all seasons. It seems to frequent all sorts of country except the most dense forest, to the outskirts of which it is, however, especially partial. It has a swift and active flight and is not too easy to capture on the wing, but is much addicted to quenching its thirst on damp mud. As my friend Mr. Guy Marshall* has already recorded, I once saw a little Bee-eater, *Melittophagus meridionalis*, capture and eat what I believe to have been one of these insects or possibly its mimic, *Pseudargynnis hegemone*.

ATELLA COLUMBINA Cram.

Upper Lualaba river, 10.v.07. Lofu river, Lake Tanganyika, 17.vii.08.

Not taken elsewhere. It may, however, on occasions have been mistaken for the preceding species.

BRENTHIS EXCELSIOR KATANGÆ, subsp. n. (Plate II. fig. 3, ♂.)

Closely allied to *B. excelsior* Butler, but differs from all specimens of that species I have seen in the following particulars:—

Upperside. Ground-colour a less deep orange, all black markings, especially the marginal ones, very much less heavy.

Underside. Black markings also smaller. The very pale ochreous area of tip of primary and greater part of secondary in the type is much darker in colour and is largely concealed by a reddish-chocolate wash. In *excelsior* this chocolate wash is confined to the hind wing, and comprises a small patch within the cell and two in the discal area of which the largest is that lying near the anal angle. In *excelsior katangæ* the reddish-chocolate wash occurs as a marginal patch in the apex of the primary, and practically covers the whole of the secondary, with the exception of a streak running from the middle of the costal margin past the end of the cell down area 5 to the outer margin, and a patch in middle of the hind margin.

Length of wing 19 mm., as compared with 20 in typical *excelsior*.

Type ♂ in the British Museum; captured at the Belgian Post of Msofi, a few miles over the border, and some 16 miles north from Kansanshi, in N.W. Rhodesia, 30.i.07. The only specimen I ever met with.

* Trans. Ent. Soc. 1909, p. 359.

PYRAMEIS CARDUI L.

This well known insect occurs everywhere in Central Africa. It seems to be most numerous in the dry season and, preferring somewhat open country, is particularly addicted to the clearings formed by native gardens. In these places it may often be seen basking in the hottest sun amongst the dried and felled mealie and millet stalks after the harvest has been gathered.

VANESSULA MILCA Hew.

I found this small insect by no means uncommon in Katanga, and it seems to be on the wing at all seasons, especially during the rains. I never saw it in N.E. Rhodesia. It usually frequents flowers, low-growing shrubs, etc., on the outskirts of dense forest, and although active and restless has not a very powerful flight.

PRECIS ORITHYA MADAGASCARIENSIS Guer.

This insect occurs everywhere, but, so far as my experience goes, is nowhere very abundant. It obtrudes itself a good deal upon the collector's notice, as it is particularly fond of cleared ground near buildings, etc.

PRECIS GENONE CLELIA Cram.

The same remarks apply to this species as to the last; it is, however, perhaps somewhat less abundant. It occurs, as does the last, throughout the year, and from the numbers of much worn specimens to be seen during the dry season, I believe it to survive that period in the imago state.

PRECIS HIERTA CEBRENE Trim.

Like the last, this species occurs everywhere and has similar habits but is much more abundant. It exhibits better marked seasonal forms than its allies.

PRECIS SOPHIA Fabr.

Occurs throughout the high plateau country in N.E. Rhodesia west of the Mchinga escarpment, but is less common in Katanga. It is an open country species and is on the wing throughout the dry season.

PRECIS OCTAVIA SESAMUS Trim.

This insect is nowhere rare, the dry-season *sesamus* form, although a more retiring insect, being apparently more common than individuals of the wet *natalensis* phase.

PRECIS ANTILOPE Feisth.

Precis simia Wallgr.

A common species in woodland areas throughout the country, including Katanga.

PRECIS CUAMA Hew.

Precis trimeni Butler.

Common in woodland in the Zambezi and Luangwa valleys side by side with the preceding. This species appears not to be present in Katanga or the high plateau country of N.E. Rhodesia west of the Mchinga escarpment, additional evidence that it is probably a distinct species from *antilope*.

PRECIS CERYNE Boisd.

Precis tukuoa Wallengr.

A common species over all the high plateau wherever there is sufficiently open country. It is more addicted to open grassy plains than any other species of *Precis* with which I am acquainted except *sophia* Fabr.

PRECIS PELARGA Fabr.

This is a common woodland species at all seasons. Specimens from the Luangwa valley belong to f. *actia*, whilst all those from the high plateau country of N.E. Rhodesia and throughout Katanga are intermediate between that form and typical *pelarga*, the males of the dry specimens, at least, being dimorphic.

PRECIS TUGELA Trim.

Not rare in well-wooded localities throughout the country. Particularly common in the thickets on the islands of Lake Bangweolo.

PRECIS ARCHESIA Cram.

Precis pelasgis Godt.

This species occurs everywhere but is nowhere very common, the wet-season form *pelasgis* being distinctly scarce in my experience. Dry-season specimens from Katanga approximate to the form *staudingeri* Dewitz. It is a woodland species, more common in hilly country than anywhere else.

PRECIS TEREAE ELGIVA Hew.

A common insect in well-wooded localities throughout the high plateau country, including Katanga. Not met with in the Luangwa valley.

PRECIS NATALICA Feld.

Ubiquitous at all seasons.

PRECIS ARTAXIA Hew.

Precis nachtigalli Dewitz.

Ubiquitous in woodland. The wet-season form, *nachtigalli* Dewitz, is scarce and usually on the wing only from mid-December to mid-January, but I have taken an occasional very worn specimen as late as the beginning of March.

PRECIS TOUHILIMASA Vuillot, An. Soc. Ent. Fr. 61. Bull. p. cxlviii (1892).

Precis pavonina Butler, P. Z. S. 1895, p. 257, pl. xvi. figs. 1-3.

Precis nobilitata Thurau, B. E. Z. xlviii. p. 137, pl. ii. fig. 11.

This handsome species is not uncommon but decidedly local. It occurs only in the Congo basin, and does not appear to cross the Congo-Zambezi watershed. It frequents a particular type of woodland where there is large timber and numerous thickets, the sort of spot where the rubber-vine is plentiful. The wet-season form, *pavonina* Butler, is on the wing longer than that of the preceding species, occurring up to the end of March.

CATACROPTERA CLOANTHE Cram.

A ubiquitous species, on the wing at all seasons.

SALAMIS ANACARDII NEBULOSA Trim.

A single specimen captured in the mid-Luangwa valley, viii.

SALAMIS PARHASSUS ÆTHIOPS Pal.

Occurs throughout the country in the neighbourhood of forest, and is on the wing at all seasons.

SALAMIS TEMORA Feld.

Lualaba valley, 1 ♂, 16.iv.07.

The only specimen met with.

HYPOLIMNAS MISIPPUS L.

Occurs everywhere during the wet season but is nowhere abundant, especially in Katanga, though fair numbers of males are sometimes seen. The typical and *inaria* forms of the female seem to occur in about equal proportions.

HYPOLIMNAS ANTHEDON Dbl.

I found this a very rare insect, and captured only a single worn specimen in the Luangwa valley, xi. Subsequently I met with one or two specimens on the Lualaba river, v., and on the Kalungwisi river, xi.

EURYTELA DRYOPE Cram.

A common and ubiquitous insect, confined however to shady spots on stream banks, patches of forest, etc.

EURYTELA HIARBAS Drury.

A single specimen from the Lubudi river, x.

ERGOLIS ENOTRÆA Cram.

Represented in the collection by a single specimen collected on the Lubudi river, x.

HYPANIS ACHELOIA Wallengr.

A ubiquitous insect, preferring open spots. It is on the wing all the year.

CRENIS OCCIDENTALIUM Mab.

Only represented by four specimens captured on the upper Lufupa river, x., and one in the same month on the lower Chambezi.

CRENIS MORANTII Trim.

Represented by a single male from dense forest, Kalungwisi river, ix. 1908.

CRENIS TRIMENI Auriv.

This species was swarming on the Lufupa and Lubudi rivers, x., but I did not meet with it elsewhere.

CRENIS CONSORS.

Crenis consors Rothsch. & Jord. Nov. Zool. 1903, p. 532.

Occurs throughout the basin of the Lualaba river and was specially abundant, x. A difficult species to catch as it is shy and usually settles on tree-trunks some 12-15 ft. above ground.

CRENIS ANSORGEI.

Crenis ansorgei Rothsch. & Jord. Nov. Zool. 1903, p. 534.

This species is represented by three specimens from the neighbourhood of Broken Hill, ix.-xi. 1905, and one from the Lufupa river, x., and by a small series from the lower Chambezi valley, x.

CRENIS BOISDUVALI Wallengr.

Occurs sparingly throughout the country during the wet season but seems nowhere common.

CRENIS AMULIA Cram.

I found this species common in the basin of the Lualaba river especially in October.

CRENIS ROSA Hew.

This species occurs to the east of the Broken Hill district on the Alala plateau and through the Serenji district up to the Chambezi valley, and everywhere to the east of these parts. To the west it is replaced by the next species, *C. pechueli* Dewitz. These large blue *Crenis* frequent woodland country, especially wooded hill-sides. They are not nearly so conspicuous on the wing as might be supposed from their appearance in the cabinet. An inexperienced observer, except for their more powerful flight, might easily mistake them for *H. daedalus* on the wing. They habitually settle on tree-trunks at some ten feet or more from the ground, and at this distance their striking underside blends harmoniously with their surroundings.

CRENIS PECHUELI.

Crenis pechueli Dewitz, N. Acta Ac. N. Cur. 41. 2. p. 195, pl. 26. fig. 1 (1879).

Crenis rosa Auriv. (parte) Rhop. Æth. pp. 161, 162.

This species replaces *rosa* to the west of the localities mentioned under that species, occurring on the upper Kafue, throughout Katanga (where it swarmed in October), and in the Lake Bangweolo district up to the south of Lake Tanganyika. It does not differ from *rosa* in its habits. Occasionally, as in the Lake Bangweolo district, both species occur together.

NEPTIS MARPESSA Hopff.

This species is very common in the Luangwa valley at all seasons, less so west of the Mchinga escarpment. It is on the wing throughout the year and frequents well wooded and shady spots.

NEPTIS NEMETES Hew.

Represented by a single specimen from the Lualaba river, 4.v.07.

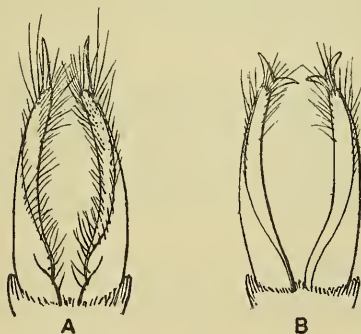
NEPTIS AGATHA Cram.

This species is ubiquitous and on the wing at all seasons.

NEPTIS JORDANI, sp. n. (Plate II. fig. 1.)

Bears a very close general resemblance to *N. agatha* Stoll, but is a smaller insect with certain small but constant differences in the markings. The chief of these are: in the *primaries* the

Text-fig. 1.



Ventral view of claspers of A, *Neptis agatha*; B, *N. jordani*.

subapical white band is narrow and *not* widened out toward the apex in areas 6, 5, 4, thus having a distal outline different to that of the same band in *agatha*. The band on the *secondaries* is

characterised by being markedly more denticulate and projecting toward outer margin in areas 5 and 4.

UNDERSIDE.—A dark patch invariably obscures the submarginal white markings of the outer margin of the *primaries* in the lower half of area 4 and the whole of area 3. A tendency to this latter character also appears in some individuals in the Hope Collection from the West Coast, which appear to be indistinguishable from typical *agatha*. Whether they are really so seems to be a point which will not be cleared up until some attempt is made to unravel the confusion in which this genus now is.

The other markings of *jordani* much resemble those of *agatha*. The margins, especially of the *secondaries*, are however somewhat more markedly denticulate than those of *agatha*.

Type ♂ in the British Museum : Chishi Island, Lake Bangweolo, 25.vi.08. Type ♀ in the British Museum : Kambove, Katanga, 17.ii.07.

Cotypes in the Hope Coll., Oxford.

Described from over 50 specimens.

I am greatly indebted to Dr. Karl Jordan of the Zoological Museum, Tring, for his assistance with this puzzling species, and I have the honour of dedicating it to him. He has been so kind as to examine the genitalia of the species and of typical *agatha* from the same place, and he pronounces them to be quite distinct.

I had long been convinced from my field experience that *jordani* represented a distinct species. Whilst I found *agatha* ubiquitous in Northern Rhodesia, etc., *jordani* was distinctly local. It usually frequents rather hot dry localities, such as river-valleys where there are thickets or dense bush. I originally captured a pair *in copulâ* on the Alala plateau, north-east of Broken Hill, xi. In Katanga I took it sparingly, chiefly in river-valleys, ii.-x., and subsequently found it abundant in the thickets on the shores and islands of Lake Bangweolo. It has a more restless, active, and less floating flight than *agatha*.

NEPTIS MELICERTA Drury.

Three specimens from the Lualaba river, iv. and v., and one from the upper Lufupa, x. A lover of dense shade.

NEPTIS GOOCHI Trim.

Sparingly in Katanga and on the Lofu river, Lake Tanganyika. A forest species.

NEPTIS CONSPICUA.

Neptis conspicua Neave, Nov. Zool. xi. p. 329, pl. i. fig. 15 (1904).

Four specimens from the Lualaba river, iv. and v., 1907. A forest species.

PSEUDACRÆA LUCRETIA TARQUINIA Trim.

A rare insect in the interior, though seen on the lower Zambezi.

Represented in the collection by a single specimen from the mid-Luangwa valley, viii.

PSEUDACRÆA POGGEI Dewitz.

A by no means rare species throughout Katanga and the northern portion of the plateau country of N.E. Rhodesia. It is on the wing throughout the year, but is uncommon during the dry season, and then seems to confine itself strictly to dense forest. In the wet season, when much more abundant, it haunts the woodland country and clearings in the forest. On these occasions it may sometimes be seen side by side with its model, *Limnas chrysippus*, and the resemblance both of flight and colouring is so exact that it is quite impossible to distinguish them on the wing.

PSEUDACRÆA TRIMENI Butler.

This species occurs rarely in Katanga, and I did not meet with it elsewhere.

PSEUDACRÆA DOLOMENA Hew., ?f. *RUBROBASALIS* Auriv.

A single specimen of what is very near to this form of the very variable *dolomena* was captured in a patch of dense forest between the Lubudi and Lufupa rivers, Western Katanga, x.

PSEUDACRÆA SEMIRE Cram.

I captured two specimens of this species in dense forest on the lower Kalungwisi river, ix.

PSEUDONEPTIS CÆNOBITA Fabr.

A forest species, not rare in suitable localities in the Lualaba valley, but not met with elsewhere. It has a general resemblance to a *Neptis* when on the wing, but has a more active and less floating flight.

PSEUDARGYNNIS HEGEMONE Godt.

This insect is common and widely distributed throughout the more open plateau country, both of N.E. Rhodesia and Katanga. It often may be taken at damp mud, and I once captured an individual of this species amongst some 14 specimens of its model, *Atella phalanta*, on such a spot. It is on the wing throughout the year.

Form *nyassæ* Bartel* appears to be described from an extreme dry-season specimen, and does not, I think, represent a local race.

CATUNA CRITHEA Drury.

This species is common in patches of forest in Katanga and in the Kalungwisi and Lofu valleys in N.E. Rhodesia. I have never taken it out of dense forest. It has a somewhat weak

* Nov, Zool. xii. p. 138.

flight and is always near the ground. It is, however, a wary species and not easy to capture in the densely forested places it frequents. It occurs at all seasons.

ATERICA GALENE Brown.

A common species in low-lying forest country within the Congo basin. Like many other allied *Nymphalinae* it habitually settles on or very near the ground, but is wary and not easy to capture.

HAMANUMIDA DÆDALUS Fabr.

This is the most abundant and ubiquitous species in the country. It may be met with everywhere, from the densest shade to the most bare spots exposed to the hottest sun.

EUPHÆDRA RUSPINA Hév.

Represented by a single male captured on the Lualaba river, 14.v.07. This and all the following species of *Euphædra* have similar habits. They frequent dense forest or clearings in its immediate vicinity. They usually settle on or near the ground, but are wary and when startled their flight is very swift.

EUPHÆDRA ELEUS Drury.

Not rare on the Lubudi and Lufupa rivers, x., in dense forest. Two individuals captured on the Kalungwisi river, viii.

EUPHÆDRA ELEUS, var. *COPRATES* Druce.

A single specimen captured on the Dikulwe river, Kambove district, 2.iv.07.

EUPHÆDRA COOKSONI.

Euphædra cooksoni Druce, Ann. Nat. Hist. (7) xvi. p. 550.

Six males and two females of this recently described species were taken on the Lualaba river, iv. and v., and one male on the Lubudi river, x.

EUPHÆDRA HERBERTI E. Sharpe.

Not uncommon on the Lualaba river, iv. and v.

EUPHÆDRA ZADDACHI CRAWSHAYI Butler.

I found this striking species scarce on the Lualaba river in Katanga, but not rare in N.E. Rhodesia, in the Chambezi and Kalungwisi valleys, and the neighbourhood of Lake Bangweolo. It is an interesting species inasmuch as it is not nearly so confined to dense forest as its allies; although often found in such places it may also frequently be seen in more open woodland flitting round shrubs, etc. Under these circumstances it certainly much resembles the moths of the genus *Xanthospiloptyryx* which it is believed to mimic. Except on the Lualaba river, iv., and on the lower Chambezi, x., I did not see this species on the wing with

the moths, of which the two commonest species were *africana* and *perdic*. This was doubtless due to the fact that I reached the range of the *Euphaedra* on the high plateau only at the beginning of the dry season. While the *Euphaedra*, like many of its genus, survives the dry season as an imago, the moths, so far as my experience goes, are strictly confined to the rains.

This *Euphaedra* is an extremely wary species with a powerful flight and by no means easy to capture. Butler's species *crawshayi* appears to represent the eastern race of *zaidachi* Dewitz, but the differences are very slight.

EUPHÆDRA MEDON L.

Not rare in the Lualaba district of Katanga and in the valley of the Kalungwisi in N.E. Rhodesia. Like many other species of *Euphaedra* it is on the wing throughout the dry season, though specimens taken during that period are all more or less worn.

EUPHÆDRA LOSINGA Hew.

Sparingly on the Lualaba river probably throughout the year.

EUPHÆDRA NEOPHRON Hopff.

Not rare in the lower Luangwa and mid-Zambezi valleys, where it seems to be the sole representative of its genus. It usually frequents the thickets and forest near streams, etc. Does not occur on the plateau west of the Mchinga escarpment or in Katanga.

EURYPHENE PLISTONAX Hew.

Represented by a single female captured near the lower Lufupa river, 5.x.07. This specimen was taken in deep shade in a dried-up stream-bed.

EURYPHENE MARDANIA Fabr.

Not rare in forest in the Lualaba district, but wary and difficult to capture.

EURYPHENE SENEGALENSIS ORIENTIS Karsch.

Scarce in thickets or forest in the lower Luangwa valley.

EURYPHENE SOPHUS Fabr.

A single male captured in forest on the Lualaba river, 5.v.07.

DIESTOGYNA VERONICA Cram.

A series of three males and four females from the Lualaba river, iv., v., and x. The males are indistinguishable from West Coast specimens except for the reduction of the small subapical white spots. The females, however, are of great interest, being more like those of *D. tadema* Hew. and allies in general coloration. They entirely lack the rufous suffusion of West Coast females

of *veronica*, the subapical band of primaries being buff, not white, and the discal area of the secondaries being also buff.

This species occurred sparingly in dense woodland. It flies near the ground, but is wary and not easily captured.

DIESTOGYNA IRIS.

Diestogyna iris Auriv. Arkiv Zool. p. 250 (1903).

This recently described species is very common throughout Katanga and the northern portion of N.E. Rhodesia, west of the Mchinga escarpment. It frequents woodland of a rather dense type varied with patches of thickets. It does not occur in forest like most of its allies. It would seem to be a true Batesian mimic of *Limnas chrysippus*. It usually settles on the ground, and when doing so, temporarily sits with expanded wings showing its *chrysippus*-like coloration. When going to rest, however, it settles with closed wings among dry leaves, and then, owing to its cryptic underside, is extremely inconspicuous.

CRENIDOMIMAS CONCORDIA Hopff.

Not rare throughout the high plateau country of N.E. Rhodesia and Katanga. It much resembles species of blue *Crenis* on the wing, but is more active and has a swifter flight. It is not uncommonly taken at damp mud.

HARMA THEOBENE Dbl. & Hew.

Not rare in the Lualaba district, iv. and v., and in the lower Kalungwisi valley, ix. A forest species.

HARMA EGESTA Cram.

I took this species sparingly on the Lubudi and Lufupa rivers during October.

EUPTERA ELABONTAS MWERUENSIS, subsp. n. (Plate 11. fig. 2, ♂.)

Differs from typical *elabontas* Hew.* in the greatly increased size and completeness of the bands on both wings, which, in common with all the markings, are of a pale sulphur-yellow colour. The discal band of primaries from vein 4 to hind margin is especially broad and not broken up into spots as in the typical form. The same may be said of the discal band of the secondaries. The underside is paler than that of the type-form, especially toward the anal angle of the secondaries.

Type ♂ in Hope Collection, Oxford: taken in some dense forest on the Kalungwisi river, 14.ix.08.

Uganda specimens would seem to be somewhat intermediate between *elabontas mweruensis* and *elabontas elabontas*.

CHARAXES BRUTUS NATALENSIS Staud.

Not rare throughout the Luangwa valley at all seasons. Also taken on Chishi Island, Lake Bangweolo, iv.

* Exot. Butt. iv. pl. xxx. fig. 33.

CHARAXES PELIAS SATURNUS Butler.

A very common species throughout N.E. Rhodesia, less so in Katanga.

CHARAXES POLLUX GEMINUS.

Charaxes pollux geminus Rothsch. Nov. Zool. vii. p. 427 (1900).

A single male, captured on the Chambezi river, 13.iv.08.

CHARAXES DRUCEANUS Butler.

Represented by a single male, captured on the Alala plateau north-east of Broken Hill, ix. 1905. A somewhat dwarfed and not very typical specimen.

[CHARAXES PENRICEI.]

Charaxes penricei Rothsch. Nov. Zool. vii. p. 460 (1900).

I observed, but did not capture, what I believe to have been an individual of this species on the upper Kafue river, x. 1905.

CHARAXES ACHÆMENES Feld.

One of the most abundant species of *Charaxes*, occurring throughout the whole country. The females are, however, very rare in my experience.

CHARAXES LUCRETIVUS Cram.

Represented by a single male taken on the Kalungwisi river, ix.

CHARAXES BOUETI LASTI Gr. Smith.

Not uncommon in the Luangwa valley during the wet season. In Katanga I took two males on the Lufupa river, xi., and one male in the Kalungwisi valley, N.E. Rhodesia, ix.

CHARAXES AZOTA Hew.

A somewhat uncommon species. I captured a pair on the Lualaba river, iv. and v., one female on the Chambezi river, iv., and one male on the Lofu river, viii.

CHARAXES ETHEOCLES Cram.

I took the males of this species over a wide area at all seasons, including the Luangwa valley. The females I found very scarce. Of the ♀ f. *phaeus* Hew. I took one at Fort Jameson, iv., and one in Katanga on the Lualaba river, v. Of the ♀ f. *manicu* Trim., I took three individuals in the neighbourhood of some forest between the Lofu river and lower Tanganyika, viii. These two forms of the female appear to mimic the male and female respectively of *Ch. bohemani* Feld.

CHARAXES GUDERIANA Dewitz.

This species occurs everywhere and at all seasons. It is

probably the most abundant species of *Charaxes* throughout this part of Africa.

CHARAXES BOHEMANI Feld.

This species is not uncommon throughout the wooded areas in all parts of the country. It appears to be the most dominant of the larger *Charaxes*. It is an extremely wary insect, the female especially so, and flies and usually settles on tree-trunks, etc., a good deal higher than most of its congeners.

CHARAXES CITHÆRON Feld.

Represented by a single female captured in the Luangwa valley, vi. One or two other individuals were observed.

CHARAXES AMELLÆ Doumet.

I captured a single male of this fine species on the upper Kalungwisi river, ix. It was flying on the edge of some dense forest.

CHARAXES NICHETES LEONINUS Butler.

I observed a few individuals of this species throughout the high plateau country of N.E. Rhodesia. I only succeeded in capturing a few specimens, which are all males. It is astonishingly active even for a *Charaxes*. I took it more commonly in the lower Chambezi valley, x., than elsewhere.

CHARAXES VARANES Cram.

This species is on the wing at all seasons throughout the area under discussion. It is, however, nowhere very abundant.

CHARAXES ZOOLINA Dbl. & Hew.

This species, which Leigh * has recently shown to be the same species as *neanthes* Hew., is uncommon. I met with it only in the Luangwa valley, iii., taking one male of the *neanthes* form and a pair of *zoolina*.

[*CHARAXES ZINGHA* Cram.]

I observed, but did not succeed in taking, one or two individuals of this species, in the lower Lualaba valley, v., 1907.

Fam. LEMONIIDÆ.

ABISARA ROGERSI Druce.

I found this species not uncommon throughout the country west of the Mchinga escarpment. It frequents dense forest-thickets and has a feeble but restless flight.

* Proc. Ent. Soc. 1908, p. lxiv.

Fam. LYCENIDÆ.

ALÆNA AMAZOUOLA Boisd.

I took this insect abundantly in the Luangwa valley, i.-iii. It chiefly frequents hillsides where there is some open woodland and short grasses.

ALÆNA AURANTIACA Butler.

A single female of this rare species was taken in May, to the east of Lake Bangweolo. It seems to be a distinct species from *A. hauteceuri* Oberth.

ALÆNA NYASSÆ Hew.

This species is not uncommon in the Luangwa valley and to the east of it, especially in the Fort Jameson district. It only occurs during the wet season. It has much the same habits as *amazoula*, and where it occurs at all is usually in fair numbers.

ALÆNA RETICULATA Butler.

I captured two individuals of this species in the upper Luangwa valley, 17.iii.08.

ALÆNA OBERTHURI Auriv.

I took three individuals of this species in the Lualaba valley, iv. 1907. It is very inconspicuous on the wing and flies very near the ground.

TELIPNA NYANZA.

Telipna nyanza Neave, Nov. Zool. 1904, p. 335, pl. i. fig. 19.

I took two specimens of this species in dense forest on the Lubudi and Lufupa rivers, x. and xi.

PENTILA AMENAIIDA Hew.

A very abundant insect in most localities during the wet season. It frequents woodland and wooded hills and has a weak but steady flight.

It is a highly variable species especially in the presence or absence of many of the spots. A few individuals have more or less, sometimes the whole, of the secondaries suffused with dusky on the upper surface.

PENTILA AMENAIROIDES Holl.

One specimen captured at Kambove, iv., which I refer with some doubt to this species.

PENTILA PEUCETIA Hew.

I captured one individual of this species at Petauke in the Luangwa valley, i., and subsequently five others near Kambove, iii.

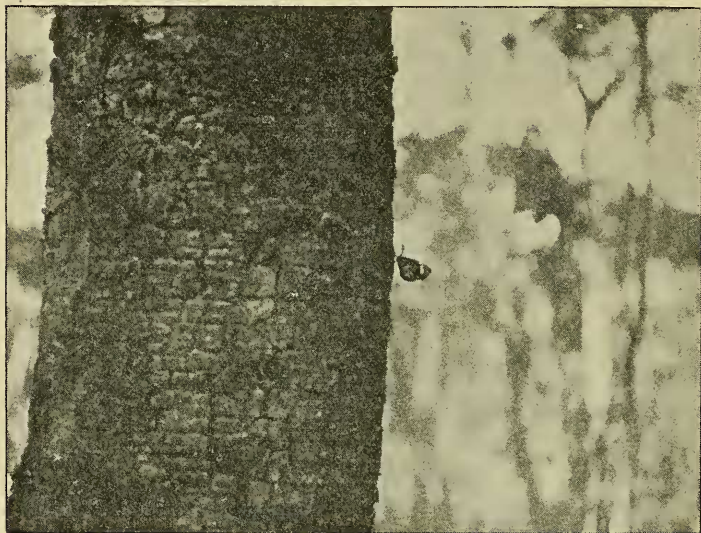
It is a very conspicuous insect with a weak flight. It often sits on a more or less exposed twig with wings folded above it.

In this attitude the bright sulphur-coloured legs exhibit a marked contrast to the black and white wings.

MIMACRÆA MARSHALLI Trim.

I took about twenty individuals of this fine species in the Lualaba valley, iv. and v., and one other later in the year, x. I also saw a few individuals in the Chambezi valley, iv. and v. These Central African specimens seem to be slightly more heavily marked than those from Mashonaland. I found its habits and the nature of its habitat very much as Marshall describes*, but did not observe it settling head downwards on the trunks as he records.

Text-fig. 2.



Mimacræa marshalli Trim., on a tree-trunk.

When in the Chambezi valley in May 1908, I was so fortunate as to obtain some photographs of this interesting species resting on a tree-trunk. I was also lucky enough to capture, on more than one occasion, both this species and *Pseudacræa poggei* as well as their model *Limnas chrysippus* within a few yards of each other.

MIMACRÆA SKOPTOLES.

Mimacræa skoptoles H. H. Druce, Trans. Ent. Soc. 1907, p. 78, pl. ii. fig. 3.

Of this rare and recently described species I took in Katanga

* Trans. Ent. Soc. 1902, p. 472.

one female on the Lualaba river, iv., and one male on the Lubudi river, x. In 1908 I took a second male on the Kalungwisi river, N.E. Rhodesia, ix. The male, which is apparently hitherto unknown, differs from the female in its smaller size and less rounded primaries. It has the subapical band narrower, and yellow instead of creamy white. On the under surface the black apical suffusion extends more than halfway down the cell to the base of the costa. All the under-surface markings of both sexes in the Katanga specimens are heavier than those of the type from Nigeria. I took this species only in dense forest. It looks exactly like an *Acræa* on the wing, but like *M. marshalli* settles on tree-trunks, which at once "gives it away" to the entomologist.

TERIOMIMA HILDEGARDA Kirby.

This species is common in woodland over a wide area from the beginning of the rains until April or May, being scarcer the last two months. I am rather inclined to think that it may prove to be the wet-season form of the next species.

TERIOMIMA ASLAUGA Trim.

This species, of which *T. pallida* Trim. is perhaps a very dry phase, occurs over a wide area, and is especially common in the Luangwa valley. It is on the wing from the end of March to August and I have taken one individual as late as November.

LARINOPODA TERA Hew.

Represented by a single specimen from the Lubudi river, x.

LIPTENA HOMEYERI Dewitz.

This species occurs locally in the Luangwa valley in March only. In Katanga I found it abundant from December to June. It always frequents woodland, and except for its somewhat deeper colour is hardly distinguishable from a *Terias* on the wing.

ASLAUGA PURPURASCENS Holl.

I took two specimens of this insect on the Alala plateau north-east of Broken Hill, xi., and one other in the Chambezi valley, v. *A. marshalli* Butler appears to be a very doubtfully distinct species, as Trimen* has already pointed out.

LACHNOCNEMA BIBULUS Fabr.

This species is ubiquitous and on the wing at all seasons.

LACHNOCNEMA DURBANI Trim.

This species also occurs everywhere but is less common than the foregoing.

PILODEUDORIX CÆRULEA H. H. Druce.

I took this species sparingly in a great variety of localities from

* Trans. Ent. Soc. 1906, p. 81 note.

November to June. Strange to say, among ten specimens captured there are only two males.

DEUDORIX BEMBA, sp. n. (Plate II. fig. 12, ♀.)

In the general coloration of the under surface and in the absence of basal spots on the upper surface this species appears to be related to *Pilodeudorix cerulea* Druce, though the underside markings are quite distinctive.

♀. UPPERSIDE purplish blue with dusky margins; a linear submarginal white line on outer margin and toward anal angle of secondaries; a long dusky tail on vein 2; anal lobe orange ochreous with a patch of black and metallic blue scales toward outer margin.

UNDERSIDE pale greyish: on both wings a discocellular stria composed of a double row of fawn-coloured scales; a transverse discal ochreous line outlined externally with white across both wings, in primaries straight, in secondaries somewhat zigzagged in area 1c and turned sharply toward inner margin at vein 1b; a faint submarginal dark line outlined externally in whitish on both wings; in *secondaries* on outer margin in area 2 a clear black eye-spot, strongly outlined proximally with orange and with a minute spot of pale blue near vein 3; in area 1c a patch of black and pale blue scales; anal lobe black with a few pale blue scales; from anal lobe a well marked orange-ochreous line extends for a short distance along inner margin.

Fringe dusky above, grey below; *palpi*, the basal segment white, the distal long, smooth and black; *thorax* above bluish; *abdomen* dusky above, paler below, at sides the edges of segments outlined in whitish.

Length of primary 15 mm.

Type in Hope Coll., Oxford. Luwingu, north of Lake Bangweolo, 2.vi.08. The only specimen met with.

DEUDORIX LICINIA Mab.

Represented by a single male taken in the Mbala country, between Fort Jameson and the Luangwa river, v.

DEUDORIX ANTALUS Hopff.

I found this species ubiquitous and occurring throughout the year.

DEUDORIX KAFUENSIS, sp. n. (Plate II. fig. 11, ♂.)

Allied to *D. elealodes* Beth.-Bak.*, but a larger insect with more rounded primaries and differing in some important points on both surfaces.

♂. UPPERSIDE.—*Primaries* deep blue with dusky costa, apex and outer margin. The deep blue suffusion, which is somewhat paler than in *elealodes*, does not reach the costa as in that

* *Deudorix elealodes* Beth.-Baker, P. Z. S. 1908, p. 112, pl. ix. fig. 6.

species and *eleala* Hew.; a black linear discocellular streak; inner margin near base with a distinct lobe much more marked than in *elealodes*.

Secondaries. Costal and inner margins dusky; remainder of wing flushed deep blue; anal lobe of medium size (much more marked than in *elealodes*), bright fulvous orange; a well marked whitish, black-tipped tail on vein 1 *b*, and a rudimentary one on vein 2. Between veins 1 *b* and 2 a well-marked sex-patch of long black hairs, much more developed than in *elealodes*.

UNDERSIDE.—Both wings whitish, with a linear pale ochreous discocellular streak.

In *primaries* a pale ochreous waved line from costa nearly to hind margin, lying about midway between cell-end and outer margin. This line is narrower, less straight and *much more distally* placed than in *elealodes*; a second less distinct, sub-marginal line of same colour lies parallel to outer margin, which is dirty whitish. A black sex-mark in area 1 *b* below cell-middle.

Secondaries have the two lines and margins as primaries. Between veins 2 and 3 a large black eye-spot surrounded by orange-ochreous; in anal lobe a minute black eye-spot outlined in metallic blue contiguous with a well-marked orange-red patch lying toward inner margin, on margin a narrow line of black from vein 6 to anal lobe.

Fringe grey on primaries, white on secondaries; *palpi* white, the terminal segment black; *thorax* above dark grey with a few pale blue scales and hairs; *abdomen* above dusky, laterally the segments edged with pale blue, below white.

Length of primary 16.5 mm.

The female differs from the male in being slightly larger and paler and in wanting the sex-marks.

♂ type in the Hope Coll., Oxford. Ndola district, upper Kafue, N.W. Rhodesia, 3.x.05.

♀ type and ♂ cotype in the British Museum. Kasama district, Chambezi valley, N.E. Rhodesia, 15.v.08.

Also three males and one female from the country east of Lake Bangweolo and the lower Chambezi, ix. and x.

DEUDORIX ZELOIDES Butler.

Virachola zeloides Butler, Ann. Nat. Hist. vii. 1901, p. 289.

One female from the upper Luangwa, 31.iii.08.

DEUDORIX CALIGINOSA Lathy.

Deudorix caliginosa Lathy, Trans. Ent. Soc. 1903, p. 197, pl. viii. fig. 7.

A single male captured on the east shore of Lake Bangweolo, v.

MYRINA FICEDULA Trim.

This species, though nowhere very abundant, occurs over the whole country and at all seasons.

PSEUDALETIS MAZANGULI, sp. n. (Plate II. fig. 6, ♀.)

Creamy white with black markings. Allied to *zebra* Holl.

♀. *UPPERSIDE*.—*Primary*. The ground-colour creamy white; costa dusky; base of wing dusky, narrowly so toward hind margin; a black band across middle of cell to median; a second black band across end of cell to vein 2, filling up angles formed by median and veins 2 and 3; a third black band from costa beyond end of cell to vein 3, where it becomes confluent with outer margin; a broad dusky outer margin from apex to posterior angle, where it is especially wide and black in colour.

Secondary. Creamy-white ground, with traces of underside discal row of spots in areas 2, 3, 4. A well-defined median black outer margin enclosing three small creamy-white spots at anal angle; black tails on 1 and 2, of which the former is the largest.

UNDERSIDE.—*Primary*. As upperside but outer margin narrower, at apex enclosing a narrow whitish line; at posterior angle much invaded by creamy-white ground-colour leaving only a mark like a ? in area 1 *b*.

Secondary. Ground-colour as upperside; a black streak extends from base along area 1 *b* for half its length and then turns sharply to inner margin; a discal line of confluent spots from costa ending in a narrow streak in area 2; black outer margin broken up into narrow marginal and submarginal lines enclosing band of ground-colour, flushed with ochreous on nervules 2, 3, 4 and in area 2. Anal lobe broadly covered with black scales enclosing a marginal and narrow submarginal line of silver ones.

Fringe dusky; *palpi*, which are very small, ochreous; *abdomen* banded black and white, in mid-ventral line a well-defined ochreous streak from head to anus.

Length of primary 25.5 mm.

Type ♀ in British Museum. Mazanguli's S. Kaluli river, Lualaba valley, Katanga, 23.iv.07.

This species seems most nearly allied to *P. zebra* Holl., but differs in many points as regards the distribution of the black markings.

HYPOLYCÆNA HATITA Hew.

This species occurs over a wide area, but is nowhere common. I found it least rare on the upper Kafue river, x., and in the same month on the lower Chambezi and Lake Bangweolo. It usually frequents the edges of patches of forest, generally high up in the trees, making it difficult to catch.

HYPOLYCÆNA LIARA H. H. Druce.

Occurs sparingly over a wide area. The females are scarce. Has somewhat the same habits as the last species.

HYPOLYCÆNA PHILIPPUS Fabr.

This is a common species almost everywhere.

HYPOLYCENA BUXTONI Hew.

Scarce in the southern part of the country and in Katanga. Not uncommon in the Lake Bangweolo district and on the Tanganyika plateau, vii.-xi.

HYPOLYCENA CECULUS Hopff.

A ubiquitous insect, which differs from most of its congeners in being a woodland and not a forest insect.

STUGETA BOWKERI Trim.

With the exception of one specimen taken on the upper Kafue, x., I met with this insect only in the Luangwa valley, where it occurred sparingly during the wet season.

STUGETA MARIA.

Stugeta maria Suffert, Deutsch. Ent. Zeit. "Iris," 1904, xvii. p. 60.

I took two females of this species (which is I think doubtfully distinct from the last) on the Lufupa river, x., and a pair in the Chambezi valley, x. 1908.

ARGIOLAUS SILARUS H. H. Druce.

I took a pair of this handsome insect on the Alala plateau, Broken Hill district of N.W. Rhodesia, x. and xi. It frequents the borders of dense forest, generally flying high amongst the trees, a habit which makes it difficult to capture.

EPAMERA SIDUS Trim.

Represented by a single female from the upper Kafue river, N.W. Rhodesia, x.

EPAMERA TRIMENI Wallengr.

Represented by one male from the Alala plateau, north-east of Broken Hill, xi., and two worn females from Fort Jameson, iii. and iv. Also a single male from the north-east of Lake Bangweolo, ix. The males are more brightly coloured than Mashonaland specimens, and the eye-spots at the anal angle are rather more marked, but the difference is only one of degree.

APHNIOLAUS PALLENE Wallengr.

I captured one individual of this curious species on the lower Zambezi, ii., one in the Luangwa valley, iii., and a third on the Alala plateau, ix. It seems to be extremely local though widely distributed. It is a woodland species.

APHNEUS ORCAS Drury.

Two males from the Lualaba river, v. The specimens approximate to the form *hollandi* Butler.

APHNÆUS QUESTIAUXI. (Plate II. fig. 4, ♀.)

Aphnæus questiauxi Auriv. Arkiv Zool. 1903, i. p. 252.

I captured a pair of this fine species on the Alala plateau, north-east of Broken Hill, ix. Subsequently I found it not uncommon in the Kalungwisi valley and Lake Bangweolo district also in September. It frequents the edges of patches of forest and sometimes visits mud-holes. It seems to be on the wing only about the month of September. In the cool high plateau country this is the early spring of the year, though some time before the first rains.

The female of this species seems to be undescribed. It is larger, length of primary 24 mm. as compared with 18–21 mm. in the male. It has more rounded primaries which exhibit a submarginal flush of reddish chocolate on apex and outer margin; blue basal flush of primary somewhat more extensive than in male; abdomen dorsally covered with blue scales, not hairy as in male.

APHNÆUS ERIKSSONI Trim.

Represented by a single male from the Alala plateau, ix., and another solitary male taken in the same month north of Lake Bangweolo. These specimens differ somewhat from South-African specimens. The upperside apical spots and all the spots and markings of the under surface are much enlarged.

APHNÆUS MARSHALLI, sp. n. (Plate II. fig. 8, ♂.)

A distinct species, somewhat resembling *A. erikssoni* Trim. on the upper surface, but without the blue wash of that species.

♂. UPPERSIDE.—*Primary*. Rich chestnut-red; shoulder of costa same colour; rest of costa, apex, and outer margin narrowly blackish; a small semi-transparent discocellular spot; a subapical row of three whitish, dark-margined spots in areas 6, 5, 4, of which the last is darker than others and placed nearer outer margin; in some individuals this spot is evanescent, and in one where it is well-marked it is accompanied by similar spots in areas 2 and 3, making a row parallel to outer margin.

Secondary. Ground-colour as primary, of a duller colour on inner margin and anal lobe, which are covered with long hairs; outer margin narrowly dusky; anal lobe bears a deep ferruginous tail.

UNDERSIDE.—*Primary*. Ground-colour rich fawn, paler toward hind margin, bearing the following silver marks and spots, outlined in black and again more irregularly in ferruginous:—one spot above costa at base, another below it in cell; a streak across middle of cell; a discocellular streak; two confluent subapical spots in areas 5 and 6, the latter slightly invading areas 8 and 9; a small spot in area 4 nearer outer margin than last; an indefinite submarginal spot in 1 *b* and a still fainter one nearer base in same area (in some specimens the former of these is a definite streak extending from 1 to 2; there may also be two additional spots in 2 and 3 and a minute one at junction of 2 with median); a

somewhat faint row of small ferruginous submarginal internervular spots; the dusky outer margin linear only.

Secondary. Ground-colour as primary with following similar spots:—one above base of costa; one at base of wing near hind margin; a row of three spots before the middle, the first large and circular above middle of cell, the second smaller within cell, the third on inner margin; a large irregular discocellular and a small spot below it in area 1 *c*. Beyond middle an oval spot below costa; a smaller one immediately below it and contiguous to it in area 6; two spots in 2 and 1 *c*, the former larger and placed nearer outer margin, followed by a stripe extending from 1 *b* to inner margin; at base of anal lobe on inner marginal side, a small irregular patch of silver scales divided from a spot of chocolate-purple on the inner marginal side of the lobe itself by some golden-yellow scales; outer margin as primary, with a similar indistinct row of internervular submarginal ferruginous spots; tail as upperside.

Fringe of primary grey, of secondary with internervular white patches; *palpi* white tipped with ochreous; *thorax* above covered with long golden-brown hairs; *abdomen* dark brown, whitish in mid-ventral line.

Length of primary 18 mm.

Type ♂ in the British Museum, from the upper Lofu valley, Tanganyika plateau, about 40 miles south of the Lake, 26.viii.08. Cotypes in the Hope Coll., Oxford.

I captured four individuals of this species in all, two on the upper Kafue river, ix., and two in the upper Lofu valley at the end of August and beginning of September. It usually frequents flowers, etc. on the outskirts of dense forest. One individual was taken at damp mud. I have dedicated this species to my friend Mr. Guy A. K. Marshall, who originally captured a damaged individual of this species at Mazoë, in Mashonaland, so long ago as September 1894, which specimen is now in the collection of Mr. Roland Trimen.

SPINDASIS PHANES Trim.

I took this species sparingly in the Luangwa valley, i. and iii., but not elsewhere.

SPINDASIS NATALENSIS Dbl. & Hew.

Represented only by three specimens from the Luangwa valley, i. and ii.

SPINDASIS NYASSÆ Butler.

This species occurred sparingly in the Luangwa valley, i.–viii. I found it fairly common in the Chambezi valley and the Lake Bangweolo district, iv.–vii.

SPINDASIS VICTORIÆ Butler.

This species is not uncommon in the Luangwa valley during

the wet season. With the exception of one specimen captured between the Luangwa river and Broken Hill, I did not meet with it elsewhere.

SPINDASIS TRIMENI, sp. n. (Plate II. fig. 7, ♂.)

Allied to *S. natalensis* and *victoriae**, but differs from these species in the apical markings of the primaries, the orange colour being reduced to three somewhat rectangular spots and never forming bars.

♂. UPSERSIDE.—*Primaries*. Basal portion of inner marginal area pale glistening blue extending upwards into base of cell; a black bar projecting from costa across middle of cell; a white bar (outlined in orange toward costa) a little before cell-middle, extending into base of area 2 as a white or orange-washed whitish spot; costa, apex, and outer margins blackish, enclosing 3 well-defined orange spots; the first nearly rectangular, lying beyond end of cell; the second somewhat triangular, lying in apex near margin in area 5 (sometimes invading, a little, areas 6 and 4); the third spot, the largest, placed submarginally in areas 3 and 2.

Secondaries. Pale blue with dark costal and outer margins, the latter double and reduced in size toward anal angle. In anal lobe a pale sulphur-yellow patch, edged toward outer and inner margins with a few black and silver scales; tails on veins 2 and 1 *b* (the latter the longer) black, orange at base with a small white tip.

UNDERSIDE.—In a fresh specimen pale sulphur-yellow with transverse fasciæ outlined in black or dark reddish-brown with central dull steel-coloured streaks. *Primaries*: a basal spot with steel centre; a fascia from costa across cell-middle ending in an extensive dusky patch on inner margin; a second fascia from costa across cell-end to near posterior angle where it breaks off into a dark line; this fascia is broken at the median vein by a dark line; a small steel-centred spot on costa beyond cell-end; a third fascia, starting on costa transversely, turns abruptly toward outer margin at vein 4; an elongated spot in area 3 near cell-end connects the 2nd and 3rd fasciæ, and so sometimes forms a branch of the former of these fasciæ; two submarginal dark lines (the outer one rather indefinite) connected with dark linear outer margin by dark lines on the veins.

Secondaries coloured as primaries, the markings much as in *S. victoriae* Butler, especially as to the basal spots and broken main fascia, which, starting from costa, extends to near anal lobe and then turns sharply toward inner margin. The second and outer fascia however differs, beginning near origin of the first it slopes toward outer margin, the two fasciæ not being nearly parallel as in *victoriae*; an additional spot below costa, a little distal to, and sometimes confluent with, the origin of the second fascia; only a trace of orange at base of anal lobe; the tails as upperside, but

* *S. victoriae* Butler, Ent. M. Mag. xx. p. 251.

anal lobe on inner marginal side more strongly black. A well-marked line of long dark hairs between veins 1 *b* and 2 (very slightly developed in female). This seems to represent the rudiment of the primitive 3rd internal nervure.

Palpi pale yellow; *thorax* and base of *abdomen* above covered with pale blue hairs, remainder of *abdomen* pale yellow, outlined on edge of segments with reddish chocolate.

Length of primary 18 mm.

The female differs in having more rounded wings; in the primaries the basal white cell-band is more extensive, and the second and third orange spots near outer margin are more extensive and confluent, forming an irregular submarginal band.

Type ♂ in the British Museum: upper Kalungwisi valley, 9.ix.08. Type ♀ in the Hope Coll., Oxford: Lofu river, 8.viii.09. Described from 18 males, 5 females.

This species occurred sparingly from the Chambezi valley to near Lake Tanganyika, iv.-ix.

SPINDASIS MOZAMBICA Bert.

This is a common species at all seasons. It seems to occur everywhere.

SPINDASIS HOMEYERI Dewitz.

This is a very common species throughout the high plateau country. The dry-season specimens of this species have the markings of the underside reduced and the ground-colour much darker. *S. kallimon* H. H. Druce* appears to be figured from an extreme wet-season specimen of this species.

SPINDASIS CRUSTARIA Holl.

Represented by a single male from the Alala plateau, which is somewhat paler above, having a marked basal wash of pale blue and less heavily marked below than in specimens from the tropical West Coast, and possibly represents a new race.

SPINDASIS sp. near ADERNA Plötz.

Two females from the upper Kafue river allied to the above species, but in absence of males I hesitate to describe them. They are larger insects, altogether paler than the females of *aderna*, the whole discal area and primaries and whole of secondaries being uniform orange without any dark markings.

ZERITIS SORHAGENI Dewitz.

I captured three individuals, two males and one female, of this rare species near Kambove, Katanga, iii. I saw, but did not take, another on an open plain on the upper Lufupa river, x. It frequents open country and flies, not very strongly, near the ground.

* Trans. Ent. Soc. 1905, p. 254, pl. xii. fig. 9.

AXIOCERES HARPA Fabr.*AXIOCERES AMANGA* Westw.

These two species are ubiquitous and on the wing at all seasons.

LEPTOMYRINA LARA L.

I took this species in some numbers in one spot in the Luangwa valley, viii., but did not meet with it elsewhere.

CAPYS DISJUNCTUS Trim.

I took four males and two females of this species on high plateau both north and south of the Lofu valley, Tanganyika plateau, viii. and ix., also one female on the east of Lake Bangweolo, v. It frequents flowers, etc., on the outskirts of dense forest. The males are somewhat intermediate between typical *disjunctus* and var. *connexivus* Butler*.

PHASIS LEROMA Wallengr.

I captured a solitary male of this species in the lower Chambezi valley, 25.x.08. This seems to extend its range considerably further north than it has hitherto been recorded.

SPALGIS LEMOLEA H. H. Druce.

Represented in the collection by a female captured at Kambove, iii., and a male on the Chambezi river, iv. It is a forest species.

LYCÆNESTHES AMARAH Guér.

A very common species in the Luangwa valley at all seasons, but scarce to the west of the Mchinga escarpment, and not met with at all in Katanga.

LYCÆNESTHES SYLVANUS Drury.

A single male from the Lubudi river, Katanga, x.

LYCÆNESTHES MINIMA Trim.

I took four individuals of this apparently rare little species in the Ndola district, upper Kafue river, N.W. Rhodesia, x.

LYCÆNESTHES LUNULATA Trim.

This species seems to be ubiquitous and to be on the wing at all seasons.

LYCÆNESTHES SANGUINEA.

Lycænesthes sanguinea B.-Bak. Trans. Ent. Soc. 1910, p. 41.

I found this handsome species, which might at first sight be mistaken for the preceding, quite common on the high plateau

* P. Z. S. 1896. p. 831, pl. xli. fig. 6.

country of the watershed and near Lake Bangweolo. I did not take it in Katanga or in the Luangwa valley. I incline to the view that it may prove to be the dry phase of *lunulata*.

LYCÆNESTHES OTACILIA Trim.

Represented by one specimen captured in the Zambezi valley at the mouth of the Luangwa river, v., and one from the upper Luangwa valley, iii.

LYCÆNESTHES PRINCEPS.

Lycænesthes princeps Butler, Ann. N. H. xviii. p. 484 (1876).

Lycænesthes neglecta Trim. Trans. Ent. Soc. 1891, p. 175.

Though nowhere abundant I met with this species over a wide area in N.E. Rhodesia.

LYCÆNESTHES MILLARI Trim.

Represented by a single female from the Lofu river, Lake Tanganyika, viii.

LYCÆNESTHES LASTI Sm. & Kirby.

This is a forest species of which I took several on the Lufupa river, x. and xi., and again in the valleys of the Kalungwisi and Lofu, viii. and ix., and the Lake Bangweolo district, x.

LYCÆNESTHES ANADEMA.

Lycænesthes anadema H. H. Druce, Trans. Ent. Soc. 1905, p. 258, pl. xiii. fig. 6.

Represented by two specimens captured near Mporokoso, viii.

LYCÆNESTHES PHENICIS Karsch.

I found this species, which seems very rare in collections, not at all uncommon over a wide area in the high plateau country of Northern Rhodesia.

LYCÆNESTHES LEVIS Hew.

Two males from the plateau country north of Broken Hill, ix. and xi. 1905, and one male from the Chambezi valley, x. 1908.

LYCÆNESTHES NIGROPUNCTATA.

Lycænesthes nigropunctata B.-Bak. Trans. Ent. Soc. 1910 p. 36.

I found this species not uncommon throughout the high plateau country of N.E. and N.W. Rhodesia from the upper Kafue river to near Lake Tanganyika, iv.-x.

LYCÆNESTHES LIODES Hew.

Luangwa valley, Petauke, one in January, one in August; not met with elsewhere.

LYCÆNESTHES CRAWSHAYI Butler.

Lycænesthes crawshayi Butler, Ann. N. H. (7) iv. p. 342 (1899).

This seems to be a common species everywhere except in the Luangwa valley. It is quite the most abundant *Lycænesthes* of this type.

LYCÆNESTHES LIGURES Hew.

A single male from the Lubudi river, x.

LYCÆNESTHES DEFINITA.

Lycænesthes definita Butler, Ann. N. H. iv. p. 342 (1899).

This species is not uncommon throughout the high plateau which forms the Congo-Zambezi watershed from the Kafue river to Lake Tanganyika.

LYCÆNESTHES LARYDAS Cram.

I took isolated specimens of this species over a wide area from the Luangwa valley to Katanga. It seems to be a forest species.

LYCÆNESTHES GEMMIFERA, sp. n. (Plate II. fig. 5, ♂.)

This remarkable little species, which I assign with some doubt to the genus *Lycænesthes*, is distinguished at a glance by possessing a row of four eye-spots on the outer margin of the underside of the secondaries. In the general distribution of the markings, in fact in all other points including the presence of small tails on the vein-endings on the secondaries, it closely resembles other species of that genus.

♂. UPPERSIDE uniform, bronze-brown. On outer margin of *secondaries* the eye-spots of underside show faintly through as dark spots. Short whitish tails on veins 1 *b*, 2, 3, more rudimentary ones on 4 and 5.

UNDERSIDE greyish brown with darker striæ outlined in grey.

Primaries. The following striæ:—a discocellular, an irregular discal row of striæ, placed very near submarginal area, except that below costa; an additional short wide stria in area 1 *b* rather more proximally placed, margin broadly greyish interspersed with semilunar marks of the darker ground-colour.

Secondaries. Two well-marked large dark spots below costa outlined in grey; a small spot on inner margin near base; an indistinct stria at base of cell; a discocellular stria; a discal row of striæ from outer costal spot to inner margin lying more proximally in area 1 *c*; submarginal area grey, with dark semilunar internervular marks; on outer margin in areas 5, 4, 3, 2, four clearly marked black eye-spots outwardly marked by a semi-circular line of greenish silver; between each spot on vein-ends an orange streak; towards anal angle in area 1 *c* two, in 1 *b* one black spot with some scattered greenish silver scales; at end of vein 1 *b* a trace of an orange streak.

Fringe grey; *pulpi* long and grey, the base only hairy; *thorax* and *abdomen* above dusky, below grey.

Length of primary 11 mm.

Type ♂ in Hope Coll., Oxford: Petauke, Luangwa valley, 16.iii.05.

Cotype ♂ in the British Museum: upper Kalungwisi valley, 7.ix.07.

The above two specimens of this striking species, with the addition of a third from east of Lake Bangweolo, x., were the only ones met with, though the localities are several hundred miles apart. They were all captured in rather open spots at damp mud, among a number of other *Lycænidæ*.

PHYLARIA HERITSIA Karsch, f. *VIRGO* Butler.

A species which occurs sparingly throughout the high plateau country of N.E. Rhodesia and Katanga, x. and xi. It seems to be absent from the Luangwa valley. It frequents the edges of forest.

URANTHAUMA ANTINORII Oberth.

This species seems to be nowhere common, but I took it occasionally throughout the plateau country and Katanga, ix. and x.

URANTHAUMA NUBIFER Trim.

Represented by only two males from some forest on the Tanganyika plateau between the Lofu river and the lake, viii.

URANTHAUMA POGGEI Dewitz.

This is a common plateau species largely replacing the next. Like its congeners it frequents the banks of streams and damp places, usually in the neighbourhood of forest.

URANTHAUMA FALKENSTEINI Dewitz.

I found this species not uncommon in the Luangwa valley and sparingly in Katanga. I did not meet with it on the high plateau.

CACYREUS LINGEUS Cram.

This species is ubiquitous and on the wing all the year.

CASTALIUS SYBARIS Hopff.

This species occurs sparingly throughout the year in the Luangwa valley. I also took one specimen at Kambove, vi., but did not meet with it elsewhere.

CASTALIUS HINTZA Trim.

I found this species sparingly over a wide area, but did not meet with it in the Luangwa valley.

CASTALIUS CALICE Hopff.

This species seems to be ubiquitous and occurs at all seasons.

CASTALIUS MELENA Trim.

This species, which seems to be doubtfully distinct from the last, occurs nearly everywhere simultaneously with *calice*, but, strange to say, seems to be absent from the Luangwa valley, although *calice* is common there.

CASTALIUS ISIS Drury.

I met with this species only in Katanga, where it was not uncommon. It delights in hot, dry, and bare spots.

TARUCUS TELICANUS PLINIUS Fabr.

This species is everywhere enormously abundant. Ninety per cent. of the large numbers of small *Lycenidæ* at mud-holes were generally of this species.

TARUCUS PULCHER Murray.

Lycæna pulchra Murray, Trans. Ent. Soc. 1874, p. 524, pl. x. fig. 7 non 8.

I find in the collection eight males and six females of what I believe to be this species. It is impossible to say with certainty, as Murray does not figure the underside of the male and has figured as the female of the species one of the highly marked females of the common *telicanus* Lang. My specimens agree with the figure of the male in their uniformly small size and peculiar amethyst tint on the upper surface. The underside markings are always of a pale fulvous colour, never dusky, and the striz are more broken up and rounded than in *telicanus*, and in the secondaries the markings within the submarginal line are more or less evanescent. The females agree closely with the males in the above-mentioned differences from *telicanus*, and have in a reduced form the same amethyst wash on the upper surface and the same small size. They are somewhat whiter on the upper surface than those of *telicanus*. I took this species over a fairly wide area, chiefly in low-lying river-valleys. It occurs mixed up with *telicanus*, and was especially common on Lake Bangweolo.

AZANUS MORIQUA Wallengr.

Azanus sigillatus Butler*.

AZANUS JESOUS Guér.

Both these species, especially the latter, seem fairly common everywhere.

AZANUS MIRZA Plötz.

I found this a common species in the Luangwa valley. Scarce on the plateau and absent from Katanga.

* For this synonymy, *vide* Trimen, Trans. Ent. Soc. 1906, p. 79 note.

NACADUBA SICHELIA Wallengr.

A very common species, somewhat scarce during the dry season. It may often be seen in very large numbers at damp mud.

POLYOMMATUS BÆTICUS L.

This species is ubiquitous. It varies a good deal in size.

CYCLYRIUS NOQUASA Trim.

Represented by a single male from the north of Lake Bangweolo, vii.

CATACHRYSOPS MALATHANA Boisd.

A very common insect throughout the country.

CATACHRYSOPS SKOTIOS H. H. Druce.

Catachrysops skotios H. H. Druce, Trans. Ent. Soc. 1905, p. 259, pl. xiii. f. 12.

Three males and one female of this species from the Lubudi and Lufupa rivers, ix. and x.

I also captured a very long series of specimens in the Chambezi valley, x. 08, which are doubtfully attributed to this species; they are larger and rather paler than the type. Most of the males exhibit on the upper surface a trace of the eye-spot at the anal angle of the primaries, which is not figured in the type. The females are larger, paler, and have a slight blue iridescence on the upper surface.

CATACHRYSOPS DOLOROSUS Trim.

I found this small species scarce, possibly it was often overlooked. I took one individual in the Luangwa valley, i., two in the Serenji district, ix., and three others in the upper Lofu valley, viii. and ix. I ultimately found it pretty common in the Chambezi valley, x. and xi.

CATACHRYSOPS ALBISTRIATUS Capronn.

A single male from Kambove, ii., and a female from near Lake Young, Chambezi valley, at the end of October.

CATACHRYSOPS PROCERUS Trim.

I captured two males of this rare species on the plateau to the north of Broken Hill, ix. and x., and two more during the same months in the country east of Lake Bangweolo, near the mouth of the Chambezi.

CATACHRYSOPS OSIRIS Hopff.

This is a common species everywhere.

CATACHRYSOPS BARKERI Trim.

Represented only by one female from the Luangwa valley, iv., and a pair in the same month from Kambove.

CATACHRYSOPS PATRICIA Trim.

I found this species sparingly in the wet season in the Luangwa valley and also on the Lufupa river, x. and xi.

CATACHRYSOPS GLAUCA Trim.

I captured a few individuals of this species at Fort Jameson and in the lower Luangwa valley, iii. Subsequently I took a good series in the upper Luangwa valley, ii. and iii. Central African specimens are of a pale grey greenish-glossed tint without the blue shade of South African ones.

CATACHRYSOPS CELÆUS Cram.

A single male from S.E. Katanga, xi., which I assign with some doubt to this species.

CATACHRYSOPS PAMPOLIS.

Catachrysops pampolis H. H. Druce, Trans. Ent. Soc. 1905, p. 258, pl. xiii. fig. 11.

Represented by a single male from the upper Lubudi river, x., and another in the same month from the lower Chambezi.

CATACHRYSOPS GIGANTEUS Trim.

I took a long series of this fine species near Petauke, Luangwa valley, during the wet season. It appears to have two broods, one at the end of December and another in March. It frequents woodland and wooded hills and has a powerful flight, during which its white black-spotted underside is rather conspicuous. A female of this species from the Victoria Nyanza was described by Butler as the female of his *hypoleucus*, which itself is a synonym of *peculiaris* Rogenh.

CATACHRYSOPS STORMSI Robbe.

I took four specimens of this species on the Lufupa river, xi. It may be distinguished at once from the last by its lack of tail.

CATACHRYSOPS CUPREUS, sp. n. (Plate II. figs. 9 ♂, 10 ♀.)

A very distinct species, at once distinguished by the golden-bronze colour of the males. The females somewhat resemble those of *C. peculiaris** Rogenh.

♂. UPSERSIDE shining golden-bronze with linear black margins to both wings. Also a well-marked black discocellular spot in *both primaries* and *secondaries*, a character not present in allied species: toward anal angle, eye-spots in areas 2 and 1 c, that in the former area the better marked, the black pupil being inwardly outlined and partially overlaid with pale blue scales, and the whole again being outlined with a white iris; eye-spot in area 1 c much less definite, partially lacking the blue colour, and the dark indistinct pupil

* *C. peculiaris* Rogenh. in Baumann's 'Usambara,' p. 331.

has a tendency to be paired; a well-marked short, stout, black tail on vein 2.

UNDERSIDE whitish with black spots. An ochreous flush at base and along costa and outer margin of primaries and whole of secondaries, also some faint submarginal markings of a brighter orange colour and a black linear outer margin to both wings.

Primaries. The following black spots and striae outlined in whitish:—an elongate discocellular; a discal row of six small elongate spots, the third, that in area 4, being placed more distally and at a different angle to the others, the last spot, that in 1 *b*, being small and sometimes paired.

Secondaries. With the following black spots and striae outlined in whitish:—a large spot below costa above cell-middle, a spot in middle of cell, a small spot on inner margin near base; a discal row of eight black somewhat elongate spots around cell-end from costa to inner margin, the first, that in area 7, being very large; those in areas 3 and 2, of which the former is very small, placed nearer cell than the remainder; the penultimate, that in area 1 *c*, more elongate and more distally placed. Eye-spots in areas 2 and 1 *c* much as upperside, but that in area 2 has a complete blue iris and is secondarily strongly outlined externally with black.

Fringe dusky; *palpi* white tipped dusky; *thorax* and *abdomen* dusky above, paler below (the vertex tinged with bronze).

Length of primary 22 mm.

The female is a larger insect, primary 24 mm. The golden-bronze colour of the male is lacking and the upper surface is washed with pale blue, and there are traces, especially in the secondaries, of a submarginal row of whitish arrow-shaped markings. A variable number of the discal row of spots on the secondaries is visible on the upper surface. In the type specimen figured, these are seen in areas 4 and 5. The eye-spots on the upper surface are faintly outlined with orange-ochraceous. The under surface resembles that of the male, but is paler. There is sometimes an additional black spot immediately below the cell-middle in area 1 *c*.

Types ♂ ♀ in the British Museum, from the Mansya river near Lake Young, 5.xi.08.

Cotypes in the Hope Coll., Oxford.

Described from eleven males and thirteen females from the Chambezi valley and Mansya river, mid-October–mid-November, 1908, and one worn female from the Lufupa river, 26.x.07.

This striking species seems most nearly allied to *C. peculiaris* Rogenh. in the distribution of its markings, agreeing with *C. gigantea* Trim. in the possession of a tail. Apart from the colour of the male, it differs from allied species in the blue, not orange, colour of the eye-spot and in the possession of a discocellular spot on the upper surface of the secondaries.

This species has a fairly strong flight, and it frequents open country on the edge of patches of woodland.

CHILADES MAHALLAKOENA Wallengr.

I have a long series from many localities which I place under this name with some doubt. The only two typical males were taken on the Alala plateau, ix., and in the Chambezi valley, x. From further north and west, though the females seem indistinguishable, the males, instead of being flushed with amethyst-pink as in typical *mahallakoaena*, do not differ in coloration from the females.

CHILADES TROCHILUS Freyer.

A common and ubiquitous species. It seems to prefer dry and exposed spots.

CHILADES UNIGEMMATA Butler.

Zizera unigemmata Butler, P. Z. S. 1865, p. 630, pl. xxxv. figs. 4, 5.

Two specimens, which, except that they have a very much paler underside, closely agree with the type of this species. They were captured in the upper Lofu valley, viii. and ix.

CUPIDOPSIS HIPPOCRATES Fabr.

A scarce insect on the low ground of the Luangwa valley or the river valleys of Katanga. Common on the high plateau.

EVERES MICYLUS Cram.

An uncommon insect taken occasionally in the upper Kafue, Lualaba, Chambezi, and Lake Bangweolo districts.

NEOLYCÆNA CISSUS Godt.

A fairly common species everywhere. It is on the wing all the year.

NEOLYCÆNA JOBATES Hopff.

I found this an uncommon insect in the Luangwa valley and on the upper Kafue river, but did not meet with it elsewhere.

ZIZERA ANTANOSSA Mab.

I found this species of *Zizera* rare, and only took one specimen on the upper Kafue river, x., and three others on the upper Chambezi river, iv.

ZIZERA GAIKA Trim.

This small species is ubiquitous.

ZIZERA LYSIMON Hübner.

This species is ubiquitous and much the most abundant of its genus.

ZIZERA LUCIDA Trim.

This species occurs over a wide area and throughout the year,

but I did not find it common anywhere except in the Chambezi valley and Lake Bangweolo district.

Fam. PIERIDÆ.

PSEUDOPONTIA PARADOXA Feld.

I found this peculiar insect not very rare on the Lufupa and Lubudi rivers, x. It frequents dense forest and the thick bush on stream-banks, etc., and much resembles *Leptosia medusa* on the wing.

LEPTOSIA MEDUSA Cram.

This species is ubiquitous, but not very abundant anywhere. It frequents forest and thickets chiefly on low ground, and it is perhaps most common in the dry season.

HERPÆNIA ERIPHIA Godt.

Occurs everywhere and at all seasons, but is nowhere very abundant. Has a strong and active flight.

MYLOTHRIS AGATHINA Cram.

A ubiquitous species and much the most abundant of its genus.

MYLOTHRIS RÜPPELLI Koch.

Common everywhere, except in the Luangwa valley where it is somewhat scarce.

MYLOTHRIS YULEI Butler.

I took a small series of this species on high plateau country during the dry season. Some specimens, especially from Katanga, have a considerable amount of orange flush at the base of the primaries and a rather different apex. They perhaps represent a distinct species.

MYLOTHRIS RUBRICOSTA Mab.

This species occurs over a wide area in localities suited to it. It frequents open marshy ground and river banks when not obscured by timber, etc., and has a rather weak flight.

APPIAS EPAPHIA Cram.

This species occurs everywhere and at all seasons. It is nowhere very abundant, the females being especially scarce.

BELENOIS GIDICA Godt.

A common insect everywhere, and may often be seen in hundreds at mud-holes. The dry season form *abyssinica* Lucas is, during its season, more common if anything than the wet phase.

BELENOIS SEVERINA Cram.

A very common species which, although it comes into the open at times, is much more addicted to shade than its allies.

BELENOIS MESENTINA Cram.

Another ubiquitous species which is on the wing throughout the year.

BELENOIS CRAWSHAYI Butler.

I took at Kambove, vii., the upper Kafue river, x., Lake Bangweolo, vi., vii., a good many individuals, some of which, especially the Kambove ones, are certainly referable to the above species. Until the whole *zochalia* group of *Beleinois* is more thoroughly worked out, it is not possible to make any definite statements, but it would seem likely that *B. formosa* Butler will prove to be the wet phase of *crawshayi*, and that Butler was in error* in assigning to *crawshayi* as its dry phase his own *diminuta*. Amongst my material there would appear to be also a small species allied to *diminuta*, but probably distinct from it. In the absence of more material and of any females I do not think it advisable to describe it.

B. crawshayi usually frequents open grassy country and may not unfrequently be taken at damp mud.

BELENOIS CRAWSHAYI, f. LATA, f. nov. (Plate III. fig. 3, ♂.)

Allied to *crawshayi* Butler, but differing chiefly in larger size, especially in the great breadth of the primaries and elongation of the secondaries. The markings are similar to those of *crawshayi*, but all the specimens have a more or less well-marked basal flush of orange-yellow on the underside of the primaries, a character which seems at least uncommon in that species. A single male from near Kambove, iv., which appears to be the wet phase of this form, is slightly smaller, and somewhat resembles the type of *B. formosa* Butler, which, as has been just stated, is possibly the wet phase of *crawshayi*. It is, however, a considerably larger insect with much heavier markings on the upperside of the secondaries, the under-surface markings being less extensive but much better defined. There is also a strongly marked orange streak on costa and a second more yellow one beyond end of costa, also faint intermarginal patches of very pale yellow around outer margins. Length of primary 30-35 mm.

Type ♂ in the British Museum: Lufupa river, Lualaba district, 14.x.07.

Cotypes in the British Museum and Hope Coll., Oxford.

Described from six males, all dry-season, Lufupa and Lubudi rivers, x. One male, wet phase, upper Dikulwe valley, iv.

BELENOIS DENTIGERA Butler.

I captured three specimens only of this species: a pair from the

* P. Z. S. 1896, p. 851.

Lualaba valley, iv. and v., and a single male from the Bunkeya river, north of Kambove, viii.

BELENOIS PICTA, sp. n. (Plate III. figs. 1 ♂, 2 ♂.)

This species exhibits some points of resemblance with *B. thysa* Hopff., in the almost evanescent discocellular spot to the primary and the orange-yellow basal flush on the underside of that wing, but on the whole seems to be nearest to *B. theora* Dbl., in general distribution of its markings. With the exception of *theora*, it differs from all the truly African species of the genus that I can find described, in the presence of an *orange-yellow* discocellular spot on the underside of the secondary. This character may, however, be seen in *B. grandidieri* Mab., from Madagascar. Dr. F. A. Dixey informs me of the interesting fact that in the case of *theora*, the yellow discocellular spot is present only in West Coast specimens, *not* in those from the Congo.

Type ♂, wet-season.

UPPERSIDE.—*Primary.* Creamy-white, the base dusted with a few black scales. A minute black discocellular line may or may not be present; costa narrowly black; a well marked apical and outer-marginal black area enclosing six internervular white streaks; this black margin projects inwardly in area 3, and is continued to posterior angle by a large spot at end of vein 2 and a smaller one on vein 1.

Secondary. Base and ground-colour as primary; a submarginal row of small internervular black spots, those in areas 4 and 1 c usually evanescent; a marginal row of seven large black spots on ends of veins, those on 7 and 1 b the smaller.

UNDERSIDE.—*Primary.* Ground-colour as upperside, the base with an ochreous flush, sometimes of considerable extent; black apex replaced by a subapical row of four spots of which third from costa is the largest, and by a marginal row of spots on ends of veins extending to posterior angle; a large submarginal spot in area 3 (the largest spot on the wing); whitish ground-colour of apex marked by internervular streaks of pale sulphur-yellow.

Secondary bears a costal streak of bright vermilion (occasionally orange-coloured); base of wing flushed with orange, of varying extent, radiating from base along internervular spaces, especially marked in area 1 c. *A well-marked orange-yellow discocellular spot*; marginal spot much as upperside, but submarginal row of spots better developed and joined to margin by rays of orange-yellow.

Fringes of both wings black with white patches on the internervular spaces; *palpi* covered with white hairs tipped dusky; thorax and abdomen whitish.

Length of primary 31.5 mm.

Type ♂ in British Museum, from 150 miles west of Kambove, near the Lufupa river, xi. Cotypes in Hope Coll., Oxford.

The dry-season male is a smaller insect, length of primary 27–28 mm. It has all the markings somewhat reduced, but is

specially characterised on the underside by a violaceous wash on the apex of the primary and over the whole of the secondary. This wash fades after death to a warm greyish. The vermilion costal streak is intensified, but the orange-yellow basal flush and black marginal spots are much reduced.

The females of this species are of a pale yellowish colour with very heavy black margins to both wings. In some specimens the only spots of upperside of secondary, not merged in the margin, are those in areas 5 and 6. In one individual, the ground-colour on both surfaces is of a bright orange. In wet-season specimens, the orange-yellow flush of the under surface is very extensive, sometimes in the secondaries extending over nearly the whole wing. The dry-season phase has the same characteristic difference as in the males.

This species, which is described from 67 males and 5 females, occurred pretty commonly through the western portion of Northern Rhodesia from the Kafue river as far north as Lake Bangweolo and throughout Katanga. It is most common in the more open parts of high plateau country, and is frequently seen at damp mud, the females usually occurring in the denser woodland.

BELENOIS THYSA Hopff.

A common species in Katanga, much less so in N.E. Rhodesia. Usually frequents woodland.

PINACOPTERYX SIMANA Hopff.

This species is common in the low-lying parts of the Luangwa valley, iv.-ix. It frequents thickets and is particularly numerous in hot and dry country.

PINACOPTERYX ASTARTE.

Pinacopteryx astarte Butler, P. Z. S. 1899, p. 971, pl. lxx. figs. 6, 7.

I have a long series of this species, the identification of which I owe to my friend Dr. Dixey, taken at all seasons throughout the area under discussion. The series includes those specimens mentioned by Dixey in Proc. Ent. Soc. 1907, pp. lxv, lxvi. The females, especially the wet-season ones, are exceedingly difficult to distinguish from *Mylothris agathina* Cram., when on the wing.

TERACOLUS CHRYSNOME Klug.

Only represented by two males captured in the upper Chambezi valley, iv., and one lower down the same valley, x.

TERACOLUS VESTA Reiche.

This species usually occurs in hot low-lying localities and is rare on the high plateau.

TERACOLUS CELIMENE Lucas.

This species was observed only in the lower Luangwa and mid-Zambezi valleys, and then only in the dry season. It frequents extremely hot and dry spots, such as rocky hillsides, etc. It is active and restless on the wing.

TERACOLUS ERIS Klug.

This species is common everywhere, the males especially having a swift and active flight.

TERACOLUS PHLEGYAS Butler.

I met with this species only in the Luangwa valley, and then only at the lowest part of it, under 2000 feet elevation. Above this it seems to be replaced by the next species.

TERACOLUS REGINA Trim.

This handsome species, especially in the wet season, is common everywhere except, as mentioned above, in the lowest ground in the Luangwa valley. It has a powerful flight, and is not at all easy to catch. When it is abundant, a dull cool morning gives the collector the best chance as, like other *Pierinæ*, it is much influenced by the weather. The dry-season females are remarkable for having acquired very much more of the purple tip of the males than those of the wet phase. In the wet phase, the purple colour is often entirely absent or represented by a mere trace.

TERACOLUS ANNÆ Wallengr.

I captured occasional individuals of this species over the whole area under discussion, but found it nowhere common. It is most common in dry and rather barren localities.

TERACOLUS OMPHALE Godt.

A common and universally distributed species throughout the year.

TERACOLUS ACHINE Cram.

A ubiquitous species, especially abundant in the dry season.

TERACOLUS EVENINA Wallengr.

A widely distributed insect, fairly common throughout the year. By no means so abundant as the two preceding species.

TERACOLUS ANTIGONE Boisd.

A very abundant little species, particularly in open country.

TERACOLUS AUXO Lucas.

Represented only by two males from the Luangwa valley, iv. and viii.

TERACOLUS DUCISSA Dognin.

I took this handsome *Teracolus* chiefly in hot dry places. Strange to say I only met with females, of which four were taken in the Kambove district, iv.-viii., and five others in the neighbourhood of Lake Bangweolo, vii.

ERONIA CLEODORA Hübn.

I found this a rare insect. I captured one individual at Kambove, iv., and saw one or two others. A second specimen was taken in the neighbourhood of Lake Bangweolo, vi.

ERONIA LEDA Boisd.

A common insect in the Luangwa valley but rather uncommon in the high plateau and in Katanga. It flies usually near the ground and is very active on the wing.

ERONIA ARGIA Fabr.

This species occurs all over the country in patches of forest, particularly in the neighbourhood of streams. It flies very high with a rather sailing flight and is not easily captured in quantities.

ERONIA THALASSINA Boisd.

This species occurs in the same localities as the foregoing and has much the same habits, the males being much more in evidence than the females.

ERONIA BUQUETI Boisd.

This would seem to be a coast species, as I took it only in the neighbourhood of Tete on the lower Zambezi. It has more the habits of *E. leda* than of the two preceding species.

CATOPSILIA FLORELLA Fabr.

Always abundant. Occasionally seen in enormous numbers. I once saw several "patches" of this species, several square yards in extent, on damp sand in a tributary of the Luangwa river, xi. They seemed to be almost entirely males.

TERIAS SENEGALENSIS Boisd.

Ubiquitous, as also are the two succeeding species.

TERIAS DESJARDINSI Boisd.*TERIAS BRIGITTA* Cram.

In Katanga this is rather scarcer than the last-named.

COLIAS ELECTO L.

Only taken in the Alala plateau, Broken Hill district, and then sparingly. An open country species.

Fam. PAPILIONIDÆ.

PAPILIO DARDANUS Brown.

This Swallow-tail occurs sparingly in patches of forest in the Lualaba valley in Katanga and in the valley of the Kalungwisi river in N.E. Rhodesia. These points would seem to be the south-east limit of its distribution. The only females observed belonged to the form *hippocoön* Fabr. The males have the curious habit of following regular routes in the forest-clearings, which they traverse over and over again at intervals of three or four minutes.

PAPILIO HESPERUS Westw.

I saw a few worn specimens of this fine species on the Lufupa and Lubudi rivers, x., and found it not uncommon in the valleys of the Kalungwisi and Lofu, viii. and ix. It is usually to be seen flitting round the outskirts of patches of dense forest.

PAPILIO CONSTANTINUS Ward.

A widely distributed species. Generally taken near the ground among grasses, rocks, etc., on wooded hillsides.

PAPILIO MACKINNONI BENGUELLE.

Papilio mackinnoni benguellæ Rothsch. & Jord Nov. Zool. xv. p. 253.

This is a scarce insect frequenting dense forest. I met with it on the upper Kafue river, x., and at Kambove, ii. It is wary and a strong flier.

PAPILIO PHORCAS Cram.

Not uncommon in the Lualaba valley, iv. and v. Not observed elsewhere.

PAPILIO NIREUS L.

A widely distributed insect but not often abundant anywhere. It chiefly frequents low-lying river-valleys and I did not meet with it in high plateau country.

PAPILIO DEMODOCUS Esper.

Ubiquitous. Flies lower than most of the larger Papilios.

PAPILIO PYLADES ANGOLANUS Goeze.

This species is ubiquitous, and on the wing at all seasons. It usually frequents somewhat open country, and may be taken in numbers at damp mud.

PAPILIO TABORANUS Oberth.

I met with this species only on the upper Chambezi, iv. and x., and on the Lofu river, viii. It resembles the preceding species in its habits.

PAPILIO LATREILLANUS THEORINI Auriv.

I captured two specimens of this handsome *Papilio* in some dense forest, in October 1907, when on the Lufupa river, one of the western tributaries of the Lualaba. The specimens have, however, unfortunately been mislaid.

PAPILIO ALMANSOR Honrath.

I took one individual of this rare species on the upper Kafue river, xi., and three others in the Lualaba valley, iv. I subsequently found it not uncommon on the lower Chambezi river, x. It frequents open grassy spots.

PAPILIO LEONIDAS Fabr.

Ubiquitous. With regard to the flight of this insect Marshall* has told us that south of the Zambezi it does not perform the sailing evolutions of a Danaine, and says that it would be most interesting to know whether it has assumed this flight in Central Africa. This is certainly the case; and this insect is peculiarly fond of sailing slowly backwards and forwards over a distance of some 8-10 yards. As it usually does this about 10-12 feet from the ground, it is extremely difficult from below to recognize it as a *Papilio* at all. When startled or feeding on flower-heads it behaves differently and is distinctly active and restless.

PAPILIO ANTHEUS NYASSÆ Butler.

A common insect throughout the area under discussion. It is particularly abundant in the hot dry weather just before the beginning of the rains, and may then be seen in numbers at damp mud.

PAPILIO POLICENES Cram.

This insect occurs sparingly everywhere. It has much the same habits as the preceding species.

PAPILIO PORTHAON Hew.

I met with this insect only in the Luangwa valley and then sparingly.

Fam. *HESPERIIDÆ*.*TAGIADES FLEUS* Fabr.

This is a common and universally distributed species with a very swift flight. As has often been recorded, it usually settles with wings outstretched on the lower side of leaves. It often does this so abruptly that it is not easy to see what has become of it.

EAGRIS JAMESONI Sharpe.

A common species at all seasons, the wet phase being much

* Trans. Ent. Soc. 1902, p. 507.

darker coloured than the dry one. Often in very large numbers in mud-holes.

EAGRIS LUCETIA Hew.

A single specimen of this rare species, taken at Kambove, iii. It is somewhat larger and darker coloured than the type and only specimen in the British Museum.

SARANGESA ASTRIGERA Butler.

A common woodland species in N.E. Rhodesia, both in the Luangwa valley and on the plateau. Individuals of the dry phase seem to lose all their spots on the upper surface though retaining them on the lower.

SARANGESA PLISTONICUS Plötz.

A fairly common species in the Luangwa and Chambezi valleys and the district of Bangweolo, iv.-viii. This species, as well as its allies, has a predilection for very shady spots, as has already been pointed out by Marshall* in the case of *S. eliminata* Holl. Jumping on the ground above a hole made by an Ant-bear will often cause clouds of them to issue forth.

SARANGESA SYNESTALMENUS Karsch.

This species, of which the preceding is perhaps the dry phase, is not uncommon in the Luangwa and Chambezi valleys, i.-v.

SARANGESA ELIMINATA Holl.

Only met with in the valleys of the Zambezi and Luangwa, vi.-xii.

SARANGESA PERTUSA Mab.

This species, which seems doubtfully distinct from the preceding, occurs sparingly in Katanga at Kambove, and on the Lualaba river.

SARANGESA MOTOZI Wallengr.

A very common species in the Luangwa and Chambezi valleys. *S. ophthalmica* Mab. appears to be referable to the female of this species.

SARANGESA MOTOZIODES Holl.

Occurs sparingly in the Luangwa valley, xi.-v., and has much the same habits as *motozi*.

SARANGESA SUBALBICANS.

Sarangesa subalbicans Beth.-Baker, Ann. N. H. (7) xvii. p. 342 (1906).

A single individual of this recently described species was captured at Kambove, iv.

* Trans. Ent. Soc. 1902, p. 422.

SARANGESA MAXIMA, sp. n. (Plate III. fig. 11, ♂.)

A very large species, characterised by its broad wings and orange underside.

♂. **UPPERSIDE.** Ground-colour pale olive-grey, through which the orange underside faintly shows, with dark markings and small hyaline spots.

Primaries. A narrow dark median fascia from costa to hind margin crossing cell just before end and forming in area 2 a rather large dark spot; before middle a narrow dark line in area 1 *b* connecting veins 1 and 2; a small hyaline discocellular spot (indistinct on upper surface); a broad short dark fascia beyond cell-end from costa to vein 6, bounded outwardly by two hyaline spots (the second and posterior very indistinct); hyaline spots below cell-end in areas 3 and 2, of which the latter is the larger; a faint submarginal row of dark internervular spots; a linear dark margin.

Secondaries. Dark spots above, within and below cell-middle; a large discocellular; a discal row of dark internervular spots around cell-end, a similar but less distinct submarginal row.

UNDERSIDE.—*Primaries.* All the markings more distinct, the ground-colour, except on hind margin, replaced by bright orange.

Secondaries. Markings as upperside but whole wing, except a patch on anterior part of outer margin, suffused with bright orange.

Fringe long and same shade as upperside ground-colour; *palpi* dusky brown above, pale yellow below; *thorax* and *abdomen* above, as upperside ground-colour, below, pale yellowish.

Length of primary 19 mm.

This species, with its broad rounded wings, resembles in shape *djalälæ* Wallengr., and its allies, but in its only slightly waved outline and general distribution of markings is more like *motozi*, etc.

Type ♂ in British Museum: Lualaba river, 29.v.07.

Cotype in Hope Coll., Oxford: upper Kalungwisi valley, 7.ix.08.

This is a forest species, of which the above two specimens were the only ones met with.

SARANGESA DJÆLÆLÆ Wallengr.

Pterygospidia djalälæ Wallengr. K. S. Vet.-Akad. Handl. 1857, Lep. Rhop. Caffr. p. 54, no. 5.

This species is not uncommon and is widely distributed. Some individuals, more especially those from the more northern part of the high plateau country, are larger than S. African specimens, rather paler above, and less flushed with fulvous below.

SARANGESA NOX, sp. n. (Plate III. fig. 16, ♂.)

Allied to *S. djalälæ* Wallengr., but dull black and almost without a rufous underside.

♂. UPPERSIDE.—*Primaries* dull black with a slight appearance of iridescence toward margins, due to the presence of a few pale blue scales; three small hyaline spots below costa between cell-end and apex; a minute hyaline spot in area 3 below cell-end, and below it in area 2 a narrow hyaline streak.

Secondaries. Ground-colour as primaries, immaculate.

UNDERSIDE as upperside but paler; in primaries a well-marked rufous streak passes through cell-end; in some individuals a faint trace of same in secondaries.

Palpi ochreous tipped dusky; *thorax*, *abdomen*, and *fringe* dusky.

Type ♂ in Hope Coll., Oxford: Petauke, Luangwa valley, 16.ii.05. Also two, Luangwa valley, ii. and vi.

SARANGESA PERPAUPERA Holl.

Not rare in high plateau country of Northern Rhodesia and in Katanga.

SARANGESA HOLLANDI Butler.

This species, which seems exceedingly rare in collections and very doubtfully referable to this genus, was by no means rare in the valleys of the Lofu and Kalungwisi rivers, vii.-ix. It frequents the outskirts of patches of dense forest.

CELÉNORRHINUS INTERMIXTUS.

Celénorrhinus intermixtus Auriv. Ent. Tidskr. xvii. p. 280 (1896).

Celénorrhinus opalinus Butler.

Two individuals captured in forest on the high plateau south of Lake Tanganyika, viii.

CELÉNORRHINUS GALENUS Fabr.

A ubiquitous forest species.

ABANTIS VENOSA Trim.

A common species everywhere. Extreme dry specimens are of a golden-brown colour, losing all the white discal area and black margin of the hind wing underside.

A. plerotica Karsch* appears to represent an extreme wet phase of this species.

ABANTIS ZAMBESIACA Westw.

This species is ubiquitous and on the wing at all seasons. It may often be taken in large numbers at damp mud.

ABANTIS PARADISEA Butler.

A common species in the wet season in the Luangwa valley but rare on the plateau. It has much the same habits as the preceding.

* Ent. Nachr. xvii. p. 374 (1896).

ABANTIS LOFU, sp. n. (Plate III. figs. 4, 5, ♂, ♀.)

Somewhat allied to *A. venosa* Trim. and *bismarcki* Karsch, but the greater portion of the secondaries white on the upper surface.

♂. **UPPERSIDE.**—*Primaries.* The basal three-fifths heavily scaled with orange ochraceous, the remainder of wing brown, the veins dusky, the following spots hyaline:—below costa between end of cell and apex three small spots of which the middle one is the longest; below end of cell a group of three spots divided only by crossing veins, the first and smallest within cell, second in angle of median and vein 3, the third and largest between 3 and 2.

Secondaries. The whole discal area white, the costal margin ochreous, the outer and inner margins black; outer margin encloses a row of small internervular spots; these, which are ochreous towards costal margin, increase in size toward anal angle, and there are represented by three larger white spots; black margin slightly invades discal area in the veins and vein 1 *b* is wholly black.

UNDERSIDE much as upperside but paler, on secondaries outer margin except at anal angle is pale greyish-brown, not black, and marginal spots are evanescent; vein 1 *b* is white, and the black of inner margin is covered with many whitish scales.

Fringe dusky, white on anal angle and inner margin of secondaries; *thorax* above orange-ochreous, marked posteriorly with two pairs of white spots; *abdomen* white, with a mid-dorsal black streak and two narrow black ventral lines, tipped with a brush of ochreous hairs; anterior legs covered with ochreous, remainder with white hairs.

Length of primary 19 mm.

Type ♂ and only specimen in Hope Coll., Oxford. Taken in a patch of dense forest on the plateau between the Lofu river and Lake Tanganyika, 24.viii.08.

The female of this species seems to be represented by a specimen captured on the edge of a very similar patch of forest east of Lake Bangweolo. It differs considerably from the male, especially in the primaries. These are more rounded than in the male, and the basal portion is a brighter orange colour, the distal portion being dusky, the two colours not blending into one another as in the male. There is an increase in number and size of the hyaline markings; between cell-end and apex four larger hyaline spots of nearly equal size; spots below cell-end enormously enlarged, especially that in area 2; an additional hyaline streak below this last in 1 *b*.

Secondaries as in male, but broader and more rounded.

UNDERSIDE as described in male, but outer margin of secondaries is darker and encloses small white marginal spot as on upperside. Colour of abdomen etc. as in male, but sides of thorax appear to bear white not ochreous hairs.

♀ type also in Hope Coll., Oxford: east of Lake Bangweolo, 11.ix.08.

This female specimen exhibits a close relationship to *A. arcto-*

marginata Lathy, the next species. It chiefly differs from that species in the colour and markings of the base of the primaries on the upperside, and in having a yellow, not black, costal margin to the secondaries on the underside.

ABANTIS ARCTOMARGINATA.

Abantis arctomarginata Lathy, Trans. Ent. Soc. 1901, p. 34, pl. iii. fig. 7.

One female from Kambove, ii.

The secondaries have a wider black hind margin than that figured in the type.

ABANTIS LEVUBU Wallengr.

I took this species only in the Luangwa valley, ii., iii., where it was scarce.

CAPRONA PILLAANA Wallengr.

Occurs sparingly throughout Northern Rhodesia.

CARCHARODUS ELMA Trim.

Not uncommon in the lower Luangwa valley; rare on the plateau and in Katanga.

HESPERIA PLOETZI Auriv.

A single individual from the Lufupa river, x.

HESPERIA SECESSUS Trim.

A species not uncommon on the plateau, especially in the Lake Bangweolo district.

All these African species of *Hesperia* have similar habits. They live amongst grasses and plants, near the ground, in open or woodland localities.

HESPERIA ZEBRA.

Hesperia zebra Butler, Ann. N. H. (6) i. p. 207 (1888).

A few individuals from Fort Jameson and the Luangwa valley, ii.-iv.

They are considerably larger than Mashonaland specimens in the National Collection, which are in their turn larger than the type from India.

HESPERIA DIOMUS Hopff.

A single specimen from the high plateau between the Lofu river and Lake Tanganyika, viii., and another near the mouth of the Chambezi river, x.

HESPERIA DROMUS Plötz.

The commonest species of the genus; occurring everywhere and at all seasons.

HESPERIA VINDEIX Grun.

A common and ubiquitous species.

HESPERIA MAFA Trim.

Sparingly met with in the Luangwa valley and on the Broken Hill plateau to the west of it.

HESPERIA BETTONI.

Hesperia bettoni Butler, P. Z. S. 1898, p. 415, pl. xxxii. fig. 1.

The collection comprises a series which I refer with some doubt to the above species. They may perhaps prove to be the wet-season form of it. I met with the species only in the Luangwa valley, ii., iii.

OXYPALPUS WOLLASTONI.

Oxypalpus wollastoni Heron, Trans. Z. S. vol. xix. p. 171.

Occurs rarely in forest country on the Lualaba in Katanga, and on the Kalungwisi river in N.E. Rhodesia.

OXYPALPUS RUTILANS Mab.

A single individual from dense forest on the Kalungwisi river, x.

OXYPALPUS FULVUS.

Oxypalpus fulvus Lathy, Trans. Ent. Soc. 1903, pp. 203, 204, pl. viii. fig. 11.

A single specimen of this brilliant little species from the Lufupa river, xi.

PAROSMODES HARONA Westw.

Pamphila harona Westw., Oates' Matabeleland, p. 253 (1881).

Oxypalpus ruso Mab.

Pamphila ruso Mab. C. R. Soc. Ent. Belg. vol. xxv. p. clxxxiii. (1891).

Oxypalpus ruso Holl. P. Z. S. 1896, p. 130, pl. iii. fig. 13.

From my field experience I am strongly inclined to think that *ruso* Mab. represents the wet phase of *harona* Westw. Both forms are essentially woodland species. In the main *ruso* is confined to the wet season, but on the high plateau, where the climate is much colder, it may be taken during the first two or three months of the dry season. Both forms are extremely common in their season.

PAROSMODES ICTERIA Mab.

This is a woodland species which is extremely abundant everywhere.

PAROSMODES MORANTII Trim.

I found this species, though widely distributed, to be every-